

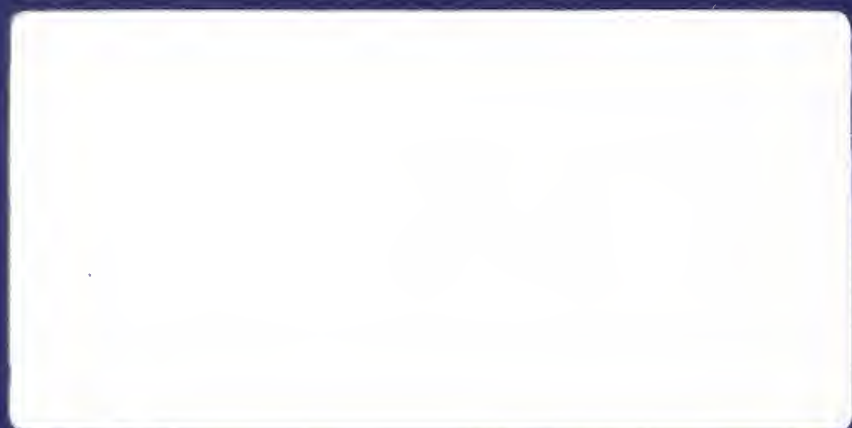


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Opportunities & Trends, 1994-1999**

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U.S. Market Analysis Program



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**U.S. Information Services Market
Analysis Program**

***Information Services Opportunities and
Trends, 1994-1999—Banking and
Finance Sector***

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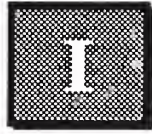
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Introduction

A Purpose and Methodology

1. Purpose

There are five basic objectives of this MAPS vertical market report:

1. *Industry Introduction* - Introduce the reader to the structure and demographics of the banking and finance market sector.
2. *Business Issues and Trends* - Identify the business issues and trends that are driving the use of information services within the banking and finance sector.
3. *Systems Uses and Issues* - Discuss how the banking and finance sector uses information systems, and the issues facing banking and finance information systems organizations.
4. *Information Services Market* - Discuss the information services market within the banking and finance sector, including market sizing and factors driving market demand for each delivery mode.
5. *Competitive Environment and Vendors* - Discuss the competitive environment and profile a selection of leading information services vendors in the banking and finance market sector.

2. Methodology

Ongoing Research—Much of the data on which this report is based were gathered during 1993 and early 1994 as part of INPUT's ongoing market analysis program. Trends, market sizes, and growth rates are based upon INPUT research and in-depth interviews with users within the banking and finance sector and the IS vendors serving this market. INPUT maintains ongoing relationships with, and a data base of, all users and vendors that it interviews. Interviewees for the research portion of this report were selected from this data base of contacts.

Resources—Extensive use was made of INPUT's corporate library located in Mountain View, California. The resources in this library include on-line periodical data bases, subscriptions to a broad range of computer and general business periodicals, continually updated files on over 3,000 information services vendors, and the most up-to-date U.S. Department of Commerce publications on industry statistics.

Forecast Estimates—Vendors, when responding to interviews or questionnaires, may be unwilling to provide detailed revenue breakouts by delivery mode or industry. Also, vendors often use different categories of industries and industry segments, or view their services as falling into different product/service categories from those used by INPUT. Thus, INPUT must estimate revenues for these categories on a best-effort basis. For this reason, the product/service and individual segment forecasts should be viewed as indicators of general patterns and trends rather than specific, detailed estimates for individual years.

When information is provided by vendors as requested, it is often offered under an agreement of confidentiality. Therefore, vendor rankings based on revenue figures should be viewed as approximations.

B

Industry Structure

For purposes of this report, the U.S. banking and finance sector will be segmented as shown in Exhibit I-1.

Exhibit I-1

Banking and Finance Industry Segments and SIC Codes

SIC Code	Industry Segment
60	<i>Depository Institutions</i>
601	Central Reserve Depositories
602	Commercial Banks
603	Savings Institutions
606	Credit Unions
609	Functions closely related to banking
61	<i>Nondepository Institutions</i>
611	Federal and Fed-sponsored Credit
614	Personal Credit Institutions
615	Business Credit Institutions
616	Mortgage Bankers and Brokers
62	<i>Security and Commodity Brokers</i>
621	Security Brokers and Dealers
622	Commodity Contracts Brokers/Dealers
628	Security and Commodity Services
67	<i>Holding and other Investment Offices</i>
671	Holding Offices
672	Investment Offices
673	Trusts (incl. religious, educational, etc.)
679x	Miscellaneous Investing

As this exhibit shows, the banking and finance sector consists of much more than just banks, brokers and S&Ls. The disaggregation of the financial services business—and the associated rise of specialized financial institutions—is an important trend that is strongly related to the development of information technology. The breadth and diversity of this sector are important factors which should not be overlooked by information services vendors.

The U.S. banking and finance sector, outlined demographically in Exhibit I-2, is highly concentrated. For example, although there were about 11,900 commercial banks controlling \$3,430 billion in assets at the end of 1991, approximately 70% of all these assets were controlled by the top 3% (368) of banks with assets over \$1 billion. Savings institutions show a similar concentration, with nearly two-thirds of the assets controlled by the top 8% (202 institutions).

Exhibit I-2

U.S. Banking and Finance Industry Demographics

SIC Code	Industry Segment	Establishments* (1,000s)	Employees (1,000s)	Payroll (\$ Billions)
60	<i>Depository Institutions</i>	82.1	2,032.8	48.4
601	Central Reserve Depositories	0.1	30.5	0.9
602	Commercial Banks	52.3	1,472.3	35.6
603	Savings Institutions	21.7	416.6	8.8
606	Credit Unions	3.6	50.6	1.0
609	Functions closely related to banking	2.8	43.9	1.4
61	<i>Nondepository Institutions</i>	42.0	505.8	14.0
611	Federal and Fed-sponsored Credit	0.6	13.5	0.4
614	Personal Credit Institutions	25.0	236.3	5.5
615	Business Credit Institutions	3.7	87.6	3.1
616	Mortgage Bankers and Brokers	10.9	152.8	4.6
62	<i>Security And Commodity Brokers</i>	25.2	410.8	26.6
621	Security Brokers and Dealers	15.9	308.1	20.8
622	Commodity Contracts Brokers/Dealers	1.2	14.7	0.7
628	Security and Commodity Services	7.1	75.7	4.5
67	<i>Holding and other Investment Offices</i>	22.6	263.2	10.0
671	Holding Offices	6.2	123.5	5.4
672	Investment Offices	1.0	16.1	1.0
673	Trusts (incl. religious, educational, etc.)	7.8	65.3	1.4
679	Miscellaneous Investing	5.0	43.5	1.5

Source: Department of Commerce, Statistical Abstract of the United States, 1993

*Note: Establishments defined as separate headquarters and branch office sites, based on payroll data.

This concentration at the top of the industry is an ongoing trend. According to a recent survey by *American Banker*, the top 300 banks held just over 60% of bank deposits in 1984. By June 30, 1993, this ratio had increased to 65.3%. In 1991 alone, when total deposits in all deposit-taking institutions declined by \$53 billion, the top 300 banks *added* \$30 billion to their deposit base—largely through mergers and acquisitions.

Although many bank observers believe that there will be a number of \$300 billion to \$400 billion giants by the end of the 1990s, INPUT believes there will still be a large number of small, thriving institutions co-existing with the giants. This issue is discussed at some length in the following chapter.

C

Report Organization and Contents

The remainder of this report is organized as follows:

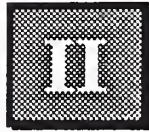
- Chapter II—*Trends, Events and Issues*—provides background information on the business issues and trends that are driving the use of information services within the banking and finance sector.

The section on trends and events focuses on two areas:

- The impacts of general business trends, such as globalization of markets, competitive changes, organizational restructuring, and the continuing use of technology to change basic operational practices and to achieve competitive advantage
 - Banking and finance industry-specific trends and events, including profitability issues, restrictions on the banking business, competition, overcapacity and mergers, and other topics
 - The section on issues identifies specific topics that should be addressed in developing a business strategy to provide information services to one or more segments of the banking and finance industry.
- Chapter III—*Information Systems*—provides an overview of the basic business processes in the banking and finance industry and their supporting information systems applications. For example, a discussion of how the banking and finance industry uses information systems to operate and manage its business activities is included. Networks and data communications are also included in this analysis.

- The impact of new and emerging technologies on applications and IS organizations is addressed, as are organizational and budgetary considerations.
- Chapter IV—*Information Services Market*—looks at the banking and finance sector from two viewpoints:
 - By product/service sector: How are these services delivered? INPUT identifies user information services expenditures for the following sectors in the banking and finance market:
 - Professional Services
 - Systems Integration
 - Outsourcing
 - Processing Services
 - Network Services
 - Applications Software Products
 - Turnkey Systems
 - By industry segment: Who is buying information services? Specifically, what segments within the banking and finance sector are buying information services?
- Overall market forecasts are provided by product/service sector and industry segment.
- Chapter V—*Competitive Environment*—identifies leading IS vendors in the industry, discusses some of the factors that affect the competitive dynamics of the industry, and profiles representative vendors.
- Chapter VI—*Conclusions and Recommendations*—reviews the trends and opportunities described in the report and provides recommendations for vendors as well as users.
- Appendix A presents the Forecast Data Base and Forecast Reconciliation.

The Forecast Data Base contains a yearly forecast from 1994-1999 of user expenditures by product/service sector for the banking and finance market. The Forecast Reconciliation compares this report's forecast with the forecast provided in INPUT's previous banking and finance market report and explains the reasons for any major differences.



Trends, Events and Issues

This chapter discusses trends, events and issues in the banking and finance industry.

Section A highlights the economic, business and political forces driving the banking and finance industry, and shows how the industry is responding to these forces.

Section B raises specific issues that should be addressed by IS vendors in developing a business strategy that is responsive to the industry trends discussed in Section A.

Section C addresses technology trends that have specific impact on the banking and finance industry.

A

General Business Trends and Events

The overall economic outlook appears brighter today than it did last year at this time. Nevertheless, the aggressive turnaround which President Clinton had hoped for is still not happening. Despite a continuing stream of predictions that the economy would soon return to steady growth—predictions that date back to the last half of the Bush administration—by mid-1994 a clear and definitive turnaround has not yet occurred.

Despite a rough start in its first year, the new Democratic administration still appears to have a mandate to overhaul the economy. Clinton has indeed delivered on his promised deficit reduction, albeit by the slimmest of margins. Military base closures and reductions in weapons programs have been approved by Congress. Specific progress is being made in overhauling the government, based on the recommendations of Vice President Gore's productivity commission. And the issue of health care reform is finally on the front burner.

Unfortunately, confidence in the new President is still not strong. After overcoming his initial problems of credibility during the first year in

office, he has now become a captive of the Whitewater fiasco. Although this seems to be more of an issue with politicians and the media than with the public, it still is a diversion that distracts Clinton from providing the leadership needed to achieve his broader goals.

The general quality of Clinton's leadership has also become an issue. Despite the grand visions he has expressed and the legislative victories he has won, Clinton has come to be seen as a creature of political expediency rather than a principled leader. As a result, people are still uncertain which positions he will ultimately support, and how his visions will be translated into reality. As far as the overall economy goes, INPUT's statement of last year still holds: though most observers believe that the economy will eventually find its way back to healthy growth (indeed, many think we are there already), the direction and timing of that growth is unclear.

Unfortunately for the banking and finance sector, many of the base closings and defense cutbacks are happening in the same areas that have suffered through the recent S&L/real estate debacles, computer industry layoffs, and state and municipal budget deficits. The impact of these problems is being strongly felt in many states across the country. California, in particular, has seen the merger of several major banks during the last several years; the closing of major defense plants and military bases; and a long string of state and local budget crises.

Recent Federal Reserve decisions also cloud the picture of the economy's trajectory. Although many businessmen and economists disagree, the Fed apparently perceives that inflation has once again become a serious threat to economic growth. The Fed's actions to raise short-term interest rates (the only rates over which it has direct control) are intended to both check potential inflation and slow the growth of the economy. If the Fed is successful in its manipulations, there may not be a traditional "recovery." Instead, there will be slow and steady growth that will provide a flexible but reasonably stable environment for the economy to adjust to the kind of restructuring envisioned by the new administration.

Overall then, there are still major questions about when—or if—a major turnaround will occur, how quickly the economy will "rebound," and what the new growth rates will be for the country, the various industries, and the financial resources that fuel the economy. Recovered or not, however, the U.S. economy is still active and is *the* major factor in world commerce. Because of this, a number of national and international business trends continue to impact the banking and finance sector in general, as summarized in Exhibit II-1.

Exhibit II-1

Buisness Trends Afecting the Banking and Finance Sector

- 1990-1993 recession in the U.S.
- "Rolling recession" in real estate
- Junk bond debt
- Restructuring of the U.S. economy
- Third World debt
- Global financial services competition
- International economic integration
- Outsourcing and the "virtual corporation"

1. 1990-1993 Recession in the U.S.

Led by problems in the real estate sector, in 1990 the U.S. finally ended a decade of largely uninterrupted economic growth and entered a three- to four-year period of mild recession. Although this recession is essentially over, its effects linger. As noted below, junk bond debt was one of the first casualties of the 1990-1991 slowdown. The slowdown also raised the rate of business bankruptcies and imperiled banks' portfolios of outstanding loans—portfolios that were already strained by growing losses in real estate.

Despite this, financial services companies recorded a modest recovery in 1991, followed by record years in 1992 and 1993. An environment of low interest rates, engineered by the Federal Reserve, benefited spread-sensitive institutions such as thrifts and banks, while the stock markets achieved record highs, benefiting brokerage firms, investors and the equity and bond markets. In 1992 and 1993, interest rates stabilized at multiyear lows, continuing the trend noted from 1980 to 1990. Security indexes, on the other hand, continued their long-term growth trend, with the Dow hovering near 4000 in late 1993 and early 1994.

2. "Rolling Recession" in Real Estate

Starting in 1989, well before a generalized recession was widely acknowledged, U.S. banks and S&Ls saw a clear and negative regional pattern: a rolling recession in real estate values, starting in the Southwest oil-patch and the Northeast industrial sectors, and moving into the Southeast, the mid-Atlantic states, and finally even into the California real estate market.

Banks and S&Ls (as opposed to the nonbank financial sector), are generally restricted by law to a single state or to a largely regional economic base. The exceptions are those large banks and S&Ls that

have been allowed by regulators to purchase failing out-of-state institutions that would otherwise have to be closed. As a result of this geographic concentration, each regional roll-down of real estate values weakened both the income and capital base of the region's banks and S&Ls, reducing their ability to either fund new development or acquire old properties.

Even with the low interest rates engineered by the Federal Reserve and drastic price reductions on distressed properties, both buyers and financing have been scarce. The FHA limit of \$150,000 on qualifying loans has eliminated this source of financing for many homes in previously overheated (and still overpriced) markets such as California. And though some homeowners have taken advantage of the low interest rates to refinance homes they purchased in the higher rate environment of the 1980s, many others have found themselves unable to refinance because their equity has actually decreased with the overall decline in real estate values. The recent moves by the Fed to raise interest rates once again will put even more pressure on these homeowners. As noted above, this problem will likely continue for some time in specific regions of the country.

3. Junk Bond Debt

The 1980s' binge of junk bond issuance to finance corporate takeovers and leveraged buyouts created massive financial hangovers in the early 1990s, especially as the economic slowdown reduced the ability to service the debt. The result was bankruptcy in some cases and substantial restructuring of the debt in others. Either case affected banks, savings and loans, and brokerages with substantial junk bond holdings.

In some instances, the debt was swapped for equity in the firms, increasing the debt holders' asset base but cutting their anticipated high rates of (junk bond) interest return. This, of course, put additional pressure on financial institutions at a time when regulators were looking for them to *shrink* their asset base as one means of improving capital adequacy. More typically, banks have tried to sell these loans—albeit at a loss—to clear their books and reduce their managerial headaches.

One bright spot in the junk bond debacle is that some brokerage firms have realized additional fees from taking public some of the successful leveraged buyouts they engineered in the 1980s. Although the majority of junk bond problems now appear to be behind us, the problems created by the Clinton administration's economic restructuring will plague some of the highly leveraged operations born in the 1980s, and some additional failures are certain over the next several years.

4. Restructuring of the U.S. Economy

Beyond the lingering impact of the recent recession and real estate difficulties, three issues will affect the U.S. economy in the next several years:

- The continuing impact of defense-related cutbacks on major population areas and industry groups
- The continuing pressure to restructure firms and improve productivity, which results in ongoing cycles of mergers/acquisitions and corporate downsizing
- The new thrust to reform the health care industry

All of these structural changes, though leading to the ultimate improvement of the economy, also have large short-term costs. The economist Joseph Schumpeter defined capitalism as a process of creative destruction. Although the advocates of these structural changes are quick to trumpet the benefits they hope to achieve, they are often silent about the destruction of jobs, careers and communities that is a natural consequence of these changes. The newest of these trends, health care reform, presents a potentially critical problem: reduction or elimination of the estimated 15%-25% "administrative overhead" in the health care system will create significant unemployment in insurance companies, processing firms and medical offices. Yet no one seems willing to address the problem of how and where these resources will be utilized in the restructured economy.

Meanwhile, California alone will suffer over 30% of the total nationwide financial and employment loss from the recently announced military base closings, causing major disruptions in the housing market and the overall economies of many regions such as the San Francisco Bay. Although the federal government has established a Base Closure Commission to help plan the transition away from a military economy in the areas surrounding the bases, there is no such formal transition support mechanism to assist the communities affected by the cutbacks and closings of aerospace firms, weapons producers, etc.

5. Third World Debt

The problems of Third World debt, once a central concern of regulators and bankers, are now largely behind us. Banks have taken massive reserves against these obligations every year since 1987. In addition, the financial restructuring of these loans, under a string of accords called the Brady Plan, has stabilized the financial situation of both the banks and the debtor countries.

Under the Brady Plan, debtor countries agreed to undertake significant economic reforms that would improve the outlook for private business and investment. At the same time, financial institutions were encouraged to restructure loans, lengthening repayment periods, reducing principal and/or interest, and converting some loans to bonds and/or equity. In some cases, foreign government guarantees were added to the restructured financing. The combination of this aggressive restructuring and the reserves accumulated since 1987 has produced a situation in which banks are probably "over-reserved" for these loans and will likely see net recoveries in the future.

As a result of the Brady Plan reforms, private investment in Latin America has increased dramatically since 1989. Major privatization of government-owned firms and industries has been undertaken in most Latin countries, creating a significant demand for new capital. The capital flight of the late 1980s has been replaced by a renewed demand for LDC debt, and money is now flowing back into these countries. With restructured investments guaranteed, future investments being made in a more pro-capital environment, and massive tax loss carryforwards from previous writeoffs, most banks are now in a good position compared to what had been a crisis mode during the last ten years. The best indication that the crisis has passed is the lack of explicit mention of LDC debt as an issue in the annual reports of major banks. In its 1993 report, Citicorp refers to its "Cross-border Refinancing Portfolio" and describes the previously troubled LDCs as "refinancing countries."

6. Global Financial Services Competition

The increasingly global level of competition facing many U.S. industries is a key business trend for the banking and finance industry as well. Although the largest U.S. money center banks for years have provided a variety of banking services overseas, during the 1980s the reverse became true.

One reason was an expansion of the trend that began with the oil shocks of the 1970s—when Middle East nations enjoying a trade surplus with the U.S. invested their petrodollars in U.S. property, corporate debt, and government securities. During the 1980s, countries with hard-goods trading surpluses with the U.S.—Japan in particular—made parallel investments. These capital exports helped finance ballooning U.S. federal government deficits and the overseas trade deficit. To manage these investments, many foreign banks opened offices or branches in the United States. Japanese banks for the first time became aggressive acquirers of U.S. banks.

As nations become large net exporters of capital, their banks tend to follow their investments overseas. Citicorp was the model for U.S. bank

expansion into foreign markets, starting in 1892 and opening branches in 12 foreign countries before the turn of the century. Following the Second World War, many other U.S. banks moved into foreign markets, and the 1960s and 1970s saw rapid growth in this arena, fueled by massive exports of capital from the U.S. Now that the U.S. has become a net importer of capital, and most U.S. banks have cut back their overseas activity, many regional banks have exited the business entirely.

Exhibit II-2 lists the top 30 bank holding companies worldwide (ranked by value of assets) at year-end 1992. Only one of these—Citicorp—is a U.S. bank, and it is near the bottom of the list in twenty-sixth place—down from twenty-third position in 1991. In addition to their retreat from foreign markets, U.S. banks face a different regulatory climate in their home markets than most foreign competitors face in theirs. The restriction on multistate branching continues to impose a significant limit on the growth of U.S. money center banks—a limit that Japanese, French and other foreign banks do not have. And though there have been worldwide agreements (under the sponsorship of the Bank for International Settlements) on improving bank capital adequacy, Japanese banks still tend to be more highly leveraged than their U.S. counterparts, and have much more freedom to make equity investments in their industrial partners.

As this report is being written, there is legislation pending in Congress to relax the restrictions on multistate branching. If and when such a bill passes, the impact of that bill will be addressed in separate a INPUT research bulletin.

Exhibit II-2

The Top 30 World Banking Companies

Rank 12/92	Institution	Total Assets 12/31/92	Total Assets 12/31/91	Percent Change
1	Dai-ichi Kangyo Bank Ltd., Tokyo	450,427	446,211	3.2
2	Fuji Bank, Ltd., Tokyo	458,675	419,430	9.4
3	Sumitomo Bank Ltd., Osaka	452,812	427,585	5.9
4	Sanwa Bank Ltd., Osaka	449,70	412,170	9.1
5	Sakura Bank, Ltd., Tokyo	441,735	420,823	5.0
6	Mitsubishi Bank Ltd., Tokyo	428,014	391,564	9.3
7	Norinchukin Bank, Tokyo	371,728	307,281	21.0
8	Credit Lyonnais, Paris	350,811	306,255	14.5
9	Industrial Bank of Japan, Ltd., Tokyo	339,137	302,760	12.0
10	Deutsche Bank, Frankfurt	305,923	295,624	3.5
11	Credit Agricole Mutuel, Paris	298,210	307,124	-2.9
12	Mitsubishi Trust & Banking Corp., Tokyo	292,546	247,539	18.2
13	Banque Nationale de Paris	283,822	275,805	2.9
14	Long-Term Credit Bank of Japan Ltd., Tokyo	274,035	221,285	23.8
15	Tokai Bank Ltd., Nagoya	272,930	252,499	8.1
16	Sumitomo Trust & Banking Co., Ltd., Osaka	268,998	235,379	13.4
17	HSBC Holdings Plc, London (a)	258,061	160,334	61.0
18	Mitsui Trust & Banking Co., Ltd., Tokyo	257,224	226,102	13.8
19	Societe Generale, Paris	256,981	223,756	14.8
20	ABN AMRO Bank, N.V., Amsterdam, Netherlands	252,709	242,828	4.1
21	Asahi Bank Ltd., Tokyo (b)	249,167	212,622	17.2
22	Barclays Plc, London	225,765	258,124	-12.5
23	Bank of Tokyo, Ltd.	222,864	218,777	1.9
24	National Westminster Bank Plc, London	216,829	229,081	-5.3
25	Daiwa Bank, Ltd., Osaka	212,229	186,635	13.7
26	Citicorp, New York	211,899	215,355	-1.6
27	Compagnie Financiere de Paribas, Paris	203,194	199,676	1.8
28	Yasuda Trust & Banking Co., Ltd., Tokyo	200,328	191,527	4.6
30	Union Bank of Switzerland, Zurich	181,926	183,727	-1.0

Although some critics express concern at the relative size of U.S. and foreign banks, this situation is not so much an indicator of a weakness in the U.S. banking system as it is the logical outgrowth of stronger European, Far East and Near East economies, various trade imbalances

and, in some cases, the flourishing of foreign banks under strong government support. While the trend toward large bank mergers in the U.S. will increase the number of banks with over \$100 billion in assets—the breakpoint for the top 50—it is unlikely that any U.S. banks will again rank among the top 20 in the world.

7. International Economic Integration

The recent signing of the General Agreement on Tariffs and Trade (GATT) accords by many countries throughout the world promises to reduce a number of trade barriers and speed the overall economic integration of Europe. Other than this event, however, the overall economic situation in Europe has not changed much in the last year. There is still much work required to achieve a rationalization of European economic and trade policies. The issue of monetary union is still unresolved, with some countries unwilling to give up this key element of their sovereignty. Germany is wracked with political and economic problems, as it struggles with the integration of the East and West German economies. And protection of domestic agriculture is still a strong issue in France.

In summary, despite the GATT accords, the planned integration of European economies will take much longer than anticipated. Despite the fact that the U.S. has not yet signed the GATT treaty, the previous concerns about restrictions on the ability of U.S.-based financial firms to compete in Europe and the possibility of stronger European firms' pushing into the U.S. market appear to be unfounded at present. In any case, with the voluntary retreat of U.S. financial institutions from foreign markets, the issue of market restrictions is probably moot.

The only impact of GATT on U.S. financial institutions is likely to be a small increase in trade-related financing by banks already in this market. Few U.S. financial institutions have any interest in expanding into foreign markets—especially after their recent disastrous experiences with LDC loans. The one exception is Mexico. The signing of the North American Free Trade Agreement (NAFTA) will have a much greater impact on U.S. trade and investment than GATT. Many firms that had only marginal international business will find new opportunities in Mexico, with the attendant increase in demand for financial services. Many smaller banks will either have to increase their service capabilities to provide support for international transactions, or face a loss of business to larger and more sophisticated competitors.

8. Outsourcing and the "Virtual Corporation"

The concept of the "virtual corporation," popularized by Professor Michael Porter of the Harvard Business School, represents a new paradigm for

organizing and managing a business. Essentially, the virtual corporation is a combination of resources focused on delivering some specific product or service. Some of these resources are controlled by the corporation, and some are provided through outsourcing and/or strategic alliances. Rather than being a static entity defined by the resources it controls and the products/services it delivers, the virtual corporation is a fluid entity, marshaling the resources it needs from a variety of sources to attack targets of opportunity in a rapidly changing marketplace. The key objective of the virtual corporation is to retain control of the customer or market, serving as a coordinator of the resources necessary to achieve this goal.

This model, though not new, is increasingly relevant to financial institutions, their customers and their information services vendors. Early examples of this model have existed for years in the heavy construction industry, where alliances such as RMK/BRJ undertook major projects during the Vietnam War. More recently, we have seen such previously unthinkable alliances as IBM, Apple Computer and Motorola jointly developing the PowerPC chip, and IBM joining Apple to develop the Taligent operating system.

A recent study by Ernst & Young in conjunction with *American Banker* applied this concept to the banking industry. Looking at the costs of providing the increasingly diverse set of products demanded by an increasingly complex market, and the variety of options that banks have to outsource parts of their operations, the E&Y/*American Banker* team concluded that the virtual bank is the organizational model for the future.

Although not using these words, the banking industry has been making extensive use of this concept during the last decade. During that time, the concept of outsourcing has changed in two important ways:

- The vendor/client relationship has evolved from a somewhat impersonal, hard-nosed commodity-oriented purchase/sale arrangement to much more of a strategic alliance between vendor and client. Vendors are increasingly oriented toward establishing a relationship in which they agree to support the evolving and diverse needs of clients, rather than simply providing a fixed package of services.
- The range of services provided by vendors has expanded, and there are now three distinct types of outsourcing/alliance relationships employed by banks:

- *Functional* outsourcing—the traditional model in which a specific business activity such as running a data center or processing checks is performed by the vendor.
- *Line-of-business* outsourcing—a vendor assumes responsibility for processing an entire product line on behalf of the client (credit cards, mortgage loans, trust, etc.), while leaving account relationships in the client's hands.
- *Business alliance* outsourcing - an allied firm provides all of the services, including marketing and staffing, in exchange for a fee.

Functional and line-of-business outsourcing have been commonly used as cost-saving approaches by smaller institutions. However, the shift toward business alliance outsourcing allows small institutions to compete with much larger firms in providing new services such as securities brokerage and financial counseling. This helps the smaller institution maintain account control, and provides it with fee-based income that would otherwise go to larger competitors. Coupled with increased flexibility in the two traditional forms of outsourcing, the emergence of business alliance outsourcing will help level the playing field between large and small institutions, and allow the smaller firms to remain viable competitors in an environment of consolidation by the largest regional and money center banks.

B

Banking and Finance Industry Trends, Events and Issues

The mix of trends and events affecting the U.S. banking and finance industry in the late 1980s and early 1990s can be addressed in terms of the ten major topics shown in Exhibit II-3.

Exhibit II-3

**Key Topics Impacting the
Banking and Finance Industry**

- Banking industry demographics
- Bank profitability
- The S&L bailout
- Business restrictions and competition
- Overcapacity and mergers
- Outlook for regulatory reform
- The shifting credit card business
- Securitization
- Boundaries of the brokerage industry
- Nonbank financial services firms

1. Banking Industry Demographics**a. Banks and Branches**

The period since the mid-1950s has been one of mixed growth for insured commercial banks. Although there has been a slight decrease in the total number of banks, the number of branches increased nearly tenfold between 1955 and 1991.

The number of banks actually increased somewhat during the 1955-to-1984 timeframe, after which it began the current phase of consolidation. Exhibit II-4 shows the yearly changes in number of banks and branches from 1984 through 1991. One thing is immediately apparent from this exhibit. While the number of banks decreased by nearly 18%, the number of branches increased by more than 25%. As a result, there was a net increase of 14% in total banking offices (headquarters and branches).

Exhibit II-4

Number of Insured Commercial Bank Offices at Year End: 1984-1991
(Continental U.S. Territories and Possessions)

Year	Main Headquarters Offices	Branch Offices	Total Offices	Percent by Category	
				Main Headquarters	Branch
1991	11,926	52,484	64,410	18.5	81.5
1990	12,345	50,815	63,160	19.5	80.5
1989	12,713	48,084	60,797	20.9	79.1
1988	13,137	46,619	59,756	22.0	78.0
1987	13,722	45,701	59,423	23.1	76.9
1986	14,209	44,356	58,565	24.3	75.7
1985	14,417	43,347	57,764	25.0	75.0
1984	14,496	41,907	56,403	25.7	74.3

Source: Federal Deposit Insurance Corporation, Division of Research and Statistics,
 "Historical Statistics on Banking: 1934-1991"

Exhibit II-5 provides a detailed breakdown of the changes in the number of banks for each of the years 1984 through 1992. Except during 1985 and 1986, voluntary restructuring accounted for more of the changes than bank failures. Although bank failures have received a great deal of publicity, far more new banks started than old banks failed during the eight-year period from 1984-1991. The primary reason for the net reduction in the total number of banks has been the large number of mergers, averaging more than 400 per year over this same eight-year timeframe.

This pattern should continue over the next several years. New banks will still be created, especially in newly developed areas with rapidly growing populations. Bank mergers will continue at the same general pace until restrictions on nationwide branching are removed. And bank failures will likely decline as earnings continue to improve and banks continue to improve their capital reserves as required by regulatory authorities.

Exhibit II-5

Changes in Number of Insured Commercial Banks: 1984-1992
Continental U.S. Territories and Possessions

Year	Voluntary Industry Restructuring					Failures			Total of Banks	Percent Change		
	New Charters	Charter Convert	Mergers	Other	Net Change	Mergers	Payoffs	Net Change		Vol Restruc	Failure	TOTAL
1992	(n/a)	(n/a)	(n/a)	(n/a)	(343)	(n/a)	(n/a)	(122)	11,461	-3.0%	-1.1%	-4.1%
1991	92	50	(448)	(8)	(314)	(101)	(4)	(105)	11,926	-2.6%	-0.9%	-3.5%
1990	165	26	(392)	(8)	(209)	(151)	(8)	(159)	12,345	-1.7%	-1.3%	-3.0%
1989	192	8	(411)	(7)	(218)	(197)	(9)	(206)	12,713	-1.7%	-1.6%	-3.3%
1988	229	4	(597)	(13)	(377)	(202)	(6)	(208)	13,137	-2.9%	-1.6%	-4.5%
1987	219	37	(545)	(15)	(304)	(172)	(11)	(183)	13,722	-2.2%	-1.3%	-3.5%
1986	257	56	(339)	(41)	(67)	(120)	(21)	(141)	14,209	-0.5%	-1.0%	-1.5%
1985	330	47	(330)	(8)	39	(96)	(22)	(118)	14,417	0.3%	-0.8%	-0.5%
1984	391	49	(329)	(6)	105	(62)	(16)	(78)	14,496	0.7%	-0.5%	0.2%
TOTALS	1,875	277	(3,391)	(106)	(1,688)	(1,101)	(97)	(1,320)				

b. Employment Patterns

Over this same time period, there has been a small net decline in the total employment at banks. This is due primarily to the reduction in the number of individual banks, and the loss of employment associated with bank failures. Exhibit II-6 traces these changes for the same 1984-1991 timeframe.

Exhibit II-6

**Number of Insured Commercial Bank Offices
and Total Employment at Year End
Continental U.S., Territories and Possessions**

Year	Main HQ Offices	Branch Offices	Total Offices	Total Employment	Chg from Previous Year	Employees Per Office
1991	11,926	52,484	64,410	1,486,210	-2.06%	23.1
1990	12,345	50,815	63,160	1,517,422	-0.90%	24.0
1989	12,713	48,084	60,797	1,531,160	0.27%	25.2
1988	13,137	46,619	59,756	1,526,984	-1.19%	25.6
1987	13,722	45,701	59,423	1,545,364	-1.12%	26.0
1986	14,209	44,356	58,565	1,562,847	0.03%	26.7
1985	14,417	43,347	57,764	1,562,317	2.33%	27.0
1984	14,496	41,907	56,403	1,526,735	1.16%	27.1

Source: Federal Deposit Insurance Corporation, Division of Research "Historical Statistics on Banking: 1934-1991" Tables CB-4, CB-11

Using the data from Exhibits II-5 and II-6 in a regression analysis, the following approximate results are obtained:

Number of Employees per Bank (HQ Office): 69

Number of Employees per Branch 12

Number of Branches per Failed Bank 20

Taken together, these parameters account for 92.5% of the variance in bank employment during this time period.

These parameters are influenced by the large number of small and medium-sized banks in the U.S. Large mergers such as the recent Bank of America/Security Pacific combination will change these parameters somewhat. However, the important trend is the continuation of growth in the number of branches, driven by continuing population growth and geographic spread.

While banks and S&Ls continue to reduce traditional retail branch paying/deposit staff through both branch automation and branch substitution (ATMs, touch-tone phone service systems), they are simultaneously adding staff associated with face-to-face sales of new retail products such as insurance and securities. Meanwhile, there is little indication that other staff-intensive service activities such as merchant teller, safe deposit, issuance of travelers' and cashier's checks, review and signing of loan documents, etc., are being reduced.

Forecasts that consumer electronic banking will cause significant reductions in branch staff are still premature. Except for a relatively few hard-core early advocates, there has been no rush by consumers to adopt any of the home banking systems that have been offered in the last 12 years. Any major increase in home banking will have to await two additional changes: PCs will have to become much more of a home utility, and the costs of the service will have to be lowered or eliminated entirely. Even so, there will still be a significant proportion of an ever-growing population that simply prefers traditional banking methods.

There are two primary areas in which consumer electronic banking is making progress: ATMs and voice response systems. One recent study concluded that nearly 25% of all households conduct the majority of their routine banking transactions without direct human contact. As ATMs become more sophisticated, more deposits and payments are handled by direct transfer via Automated Clearing House (ACH), and the use of credit/debit cards expands into new merchant categories, there will be a gradual reduction in the need for tellers. But human nature and competitive pressures will continue to require that banks retain their traditional branch operations for the foreseeable future.

Note, however, that these statistics and trends are evident in an environment of increasing competition and "cream skimming" from brokerages, mutual funds and other nonbank financial firms, some of which do nearly all of their business via phone and mail. Like some leading-edge banks, a number of the leading-edge discount brokers and fund managers (Schwab, Fidelity) are offering PC-based systems for at-home access to customer accounts. Because their customer base is more sophisticated and the scope of their business lends itself to more automation, a larger proportion of their activity is handled electronically via touch-tone telephone or PC—including 50% of Schwab's daily volume of 250,000 calls for account balances, stock quotes and trades.

The net result of all these trends will be a continuing decline in total industry employment. Again, this decline is not likely to be as great as many sources project. Even if there is an increase in the pace of bank and S&L mergers, the effect will be primarily on headquarters staff. In general, this is where the effect of consolidation is most heavily felt. As noted above, the total number of banking offices increased during the 1984-1991 timeframe, despite the well-publicized mergers and failures. Because this increase is driven by demographic factors, there is no reason to believe that the trend will change.

2. Bank Profitability

The low-interest-rate environment of the last several years has had two key effects on the banking industry:

- By reducing corporate borrowing costs from the levels of the late 1980s, many potential bankruptcies have been averted and associated bank losses have been reduced.
- By reducing bank borrowing costs:
 - Bank earnings and capital have increased
 - Bank failures have been reduced
 - The bank insurance fund (FDIC) has grown faster than originally anticipated

The overall effect has been to improve the banking environment, reducing the public perception that this is a problem area which needs constant scrutiny and legal or legislative control.

The low-interest-rate environment has also increased the value of the Resolution Trust Company (RTC) portfolio of foreclosed real estate and defaulted loans. In addition, despite massive startup problems caused in part by inconsistent legislative direction and support, the RTC has become more effective in managing and disposing of its inventory. This has further reduced the public perception of banking as a troubled and unprofitable industry.

In fact, the industry in general is basically sound, growing and profitable. Exhibit II-7 presents a detailed breakdown of income and expense for commercial banks during the period 1984-1991.

Exhibit II-7

**Income and Expense Breakdown of Insured Commercial Banks
Continental U.S., Territories and Possessions (Data in Millions of Dollars)**

Year	Net Interest Income	Net Non-Int Expense	Net Before Loan Loss, Securities Taxes, etc.	Prov for Loan Loss	Security Gains (Losses)	Extra-ordinary Items	Prov for Income Taxes	Net After Tax Income
1991	121,901	(64,948)	56,953	(34,274)	2,966	687	(8,285)	18,047
1990	115,499	(60,853)	54,646	(32,084)	482	648	(7,691)	16,001
1989	112,187	(57,155)	55,032	(31,031)	801	309	(9,539)	15,572
1988	107,245	(56,371)	50,874	(17,164)	280	812	(9,988)	24,814
1987	99,887	(55,763)	44,124	(37,544)	1,427	201	(5,404)	2,804
1986	94,937	(54,373)	40,564	(22,106)	3,951	276	(5,266)	17,419
1985	90,898	(51,311)	39,587	(17,774)	1,565	228	(5,629)	17,977
1984	81,268	(47,306)	33,962	(13,816)	(140)	218	(4,721)	15,503

Source: Federal Deposit Insurance Corporation, Division of Research "Historical Statistics on Banking: 1934-1991" Tables CB-7

This exhibit is structured to make several key points. First, net interest income (interest income less interest expense) has been growing throughout the period. Net non-interest expense (non-interest income less non-interest expense) has been growing more slowly than net interest income, providing a growing net before loan loss.

Loan losses, securities gains/losses, taxes, etc., are cyclical expenses based on a combination of regulatory and economic trends, and the overall industry level of these cyclical expenses is only indirectly related to the rate of bank failures. Following a steep rise from 1984 to 1988, bank failures actually declined by 50% during the 1988-1991 timeframe, while loan loss provisions continued at a high and growing rate.

As indicated earlier, banks are now largely over-reserved for LDC debt. Problems in the junk bond and real estate portfolios are being worked out, and consumer defaults are still at an acceptable level. Overall yield spreads have widened in the last several years as the Federal Reserve has managed to drive down interest rates to a 30-year low. As a result, both 1992 and 1993 were record years for bank profits, relaxing some of the pressure on previously troubled banks.

Most bank failures stem from management problems, such as undertaking high-risk loans or speculating on interest rates, rather than from overall economic factors. As a result, at the same time that regulators have been tightening capital adequacy requirements and shifting toward more risk-based approaches to determining capital adequacy requirements and deposit insurance premiums, they have also tightened lending guidelines, thus curbing the opportunity for a repeat of the speculative excesses of the 1980s.

In the short run, banks were also increasing their purchases of "safe" assets such as Treasury securities, which do not carry the reserve requirements of ordinary loans. Though this caused a temporary shortage of lendable funds in the 1992-93 timeframe and thereby exacerbated the problems of recovering from the recession, there has been a recent reversal of this trend and a return to more normal patterns of lending as banks have accumulated enough capital to meet the new capital adequacy guidelines.

Where possible, banks have also been shifting more of their income into fee-based businesses. This makes banks more financially stable in two important ways:

- Fee-based income is steadier, and not as subject to cyclical business risk as is interest income.

- Unlike lending income, where the loss of income from a defaulted loan also requires a capital writedown to reflect the loan loss, a loss of fee income has little or no impact on capital. Most fee-based businesses are based on systems that have been expensed, and current operating expenses (staff, occupancy, etc.) that can be easily changed.

According to a recent study by Merrill Lynch, the non-interest portion of major banks' revenue may reach 40% by the end of 1994. Part of this comes as a substitute for interest income, as depositors take funds out of ordinary bank accounts and put them into mutual funds managed by the same banks. Knowing they would suffer from disintermediation in the recent environment of low interest rates, many of the large banks established their own mutual funds in order to retain the money and the account relationships. However, banks have also moved aggressively into corporate finance and advisory work, which was once the province of traditional investment banks. Unbundling account relationships and charging fees for services previously provided for free under "compensating balance" arrangements is another source of fee-based income for many banks.

As banks shift their operations toward the "virtual bank" model discussed earlier, it is also easier for institutions of all sizes to enter and exit specific lines of business as market conditions dictate. Although the importance of easy market entry is obvious, the issue of easy market exit is an important and often overlooked factor. If a financial institution drops an established line of business due to cost or profitability pressures, customers may transfer *all* of their business to another institution. In the virtual bank model, the identity of the service provider is irrelevant, allowing the institution to maintain account control, increase the proportion of its fee-based business, and stabilize its income base.

In summary, bank profitability is rebounding from the depressed conditions that started in 1987, and should continue to grow at a reasonable pace. However, in the near term, most of the profits will continue to be channeled back into higher capital ratios, so there will continue to be strong emphasis on cost control and limited expansion into new areas and activities. The key determinants of the industry's profit growth will be the Fed's ability to manage interest rates, and the consequences of the economic restructuring proposed by the new administration.

3. The S&L Bailout

Over the last several years, American taxpayers have watched as the federal government's management of the bailout of insolvent savings and loan institutions (S&Ls) faltered repeatedly and current and forecast

costs mushroomed. Within the last year, however, the situation seems to have improved somewhat. The Resolution Trust Corporation (RTC) has become more aggressive in the management and sale of assets acquired from failed S&Ls, as Congress and the finance and real estate sectors have come to agree that quick and efficient sales are better than lingering in hope that the markets will someday turn around. As evidence of this change of direction, Congress passed the RTC Completion Act in September 1993, giving the RTC an additional \$18 billion in funding and extending its life until September 30, 1994. Additional funding was also provided for the Savings Association Insurance Fund (SAIF), the RTC's successor after September 1994.

Since December 1992, regulators have been required to take supervisory action against troubled S&Ls. However, the number of remaining thrifts that are likely to be transferred to the RTC is small, probably less than 10. Therefore, though the magnitude of the bailout is still uncertain, it is no longer the political sore spot it once was. And recent changes in FDIC insurance rates, coupled with the improved profit picture for banks, have eliminated the discussion about banks perhaps following the path of S&Ls. In fact, the banks' profit picture has improved so much that it is now estimated that the FDIC insurance fund will be rebuilt to its target levels well before the original plan date of 2002.

S&Ls have been helped by the same low-interest-rate environment that has improved bank earnings. And the rate of defaults on mortgages held by S&Ls has decreased from the highs of the last several years. Nevertheless, the outlook for S&Ls is not as bright as for banks. S&Ls are constrained to a narrower range of service offerings than banks, and cannot enter many fee-based businesses. Therefore, any decrease in interest rate spreads will put a greater strain on S&Ls than on banks. The concentration of S&Ls in the housing market makes their asset base more vulnerable to upheavals such as military base closings and other defense-related cutbacks. California is a notable example, with many of the thrifts continuing to face a sluggish market in which declining home prices and continuing loan foreclosures are the general order of business.

In summary, the outlook for the thrift industry is similar to that of the banking industry: Profitability and growth will be dependent on the same factors, and cost controls will still be paramount as institutions seek to raise their capital base to meet increasingly stringent regulatory guidelines. Although some S&Ls will merge into banks, or change their charters so as to become banks, there will continue to be a large and profitable core of S&Ls as part of the financial landscape.

4. Business Restrictions and Competition

a. Banking Product Options

Until very recently, banks have remained largely restricted by the 1933 Glass-Steagall Act from diversifying beyond basic banking functions—even from entering into related financial businesses such as mutual funds, insurance, and real estate. However, in recent years the firewall separating the banking and securities business has been steadily eroding. Banks are now allowed to sell a wide variety of securities on an "agent" basis. For example, large money center banks are now acting as selling, record-keeping and trust agents for corporate commercial paper, generating fee-based income in place of the interest income they used to receive from lending to these same corporate customers. Banks are also entering the asset-based underwriting business by securitizing portions of their loan portfolios (credit cards, auto loans, etc.).

In addition, banks are now starting to win approval for equity-securities underwriting, which the Federal Reserve first granted to J.P. Morgan in 1990. Banks are now also selling stocks, bonds, mutual funds and annuities to their retail customers, often in affiliation with insurance company subsidiaries that provide the staff, training, and securities and insurance licenses. Running their own mutual funds as a hedge against disintermediation is the most significant recent product thrust by banks. The ultimate example of this trend is the recent acquisition by Mellon Bank of The Boston Company, and its subsequent merger with Dreyfus Corp. In an interesting competitive twist, stock brokerage firms now want corresponding authority to enter the banking business—or at least access to the Federal Reserve's discount window for emergency borrowing in a liquidity crisis.

b. Nonbank Funding Sources

One of the biggest changes to the banking business in the past decade is the availability to corporate borrowers of many nonbank sources of funds. Funding options are available from insurance companies and commercial credit sources, and there is a vastly expanded commercial paper market, aided by Wall Street brokerage and investment banking houses as well as the banks themselves.

In addition to simple lending, a wider range of bank-like services is available from essentially unregulated competitors like General Electric, Sears Roebuck, General Motors, and American Express. Many of the largest industrial firms have established captive finance arms to support the lease or purchase of expensive capital equipment. Because they know the customers, the products and the market, these firms are often able to make sharper credit decisions than a bank, and have more ways

to dispose of equipment returned from lease or repossessed from defaulting borrowers.

c. Money Market Funds

One of the strongest challenges to the traditional deposit business of banks and S&Ls is coming from money market funds, which increasingly succeed in drawing basic deposits and certificate-of-deposit funds from banks. Money market funds tend to offer return rates 0.5% or more higher than bank rates because money market costs are lower due to the lack of branch bank costs, deposit insurance fees, and regulatory requirements to hold reserves against deposits. Most money market funds have improved the accessibility of customers' funds through check-writing privileges, Visa or MasterCard debit cards, ATM-based access, and ACH draft options.

Money market funds are offered by a wide variety of financial institutions. All major brokerage houses offer funds that are linked to a securities account such as the Merrill Lynch CMA or the Schwab One. Banks and S&Ls can offer money market funds through their securities sales affiliates. And most large mutual fund groups such as Dreyfus, Fidelity, etc., include money market funds among their many product offerings.

d. International Issues

For some time now, foreign banks and finance entities have been increasing their competition for the U.S. corporate lending business. These banks have established a significant presence in the U.S. market, both through direct branching and through purchase of U.S. banks. At the same time, foreign deposits in U.S. banks have become somewhat more volatile as U.S. interest rates have gone down and the FDIC has started to pay only a fraction of uninsured deposits in some failed banks. By contrast, U.S. banks have continued to reduce their emphasis on direct corporate lending, instead focusing on the consumer market and fee-based services.

5. Overcapacity and Mergers

There is no question that the U.S. financial system is far more fragmented than that of any other developed country. With 11,920 commercial banks, 2,560 savings institutions and 12,960 credit unions at the end of 1991, not to mention brokerage firms and finance companies, the U.S. consumer has many options to choose from.

Since 1985, when a Supreme Court ruling permitted a state to make local reciprocal banking agreements with other nearby states, there has been

some consolidation of banks in the mid-sized sector of the business. This kind of consolidation has given rise to a new class of super-regional banks that were built up through mergers and acquisitions. Some of these new banks are now larger than their older money center cousins.

To date, money center banks have been excluded from these agreements because states view such banks as too powerful. However, this resistance may soon erode as states permit acquisitions from out of the region. The recent acquisition of Continental Bank by Bank of America is one example of such a merger. Though this kind of acquisition does not create a super-regional institution such as NationsBank, it is a step toward the development of a nationwide network for a major money center bank.

Whereas the development of super-regionals is driven in large part by geographic economies of scale and the elimination of duplicate overhead, the BofA/Continental type of merger is driven more by a desire to expand the customer base. As a one-branch bank catering to very large corporate customers, and with most of its operations outsourced, the Continental merger did not provide BofA with any operating economies of scale. Even if resistance to them declines, wide geographic mergers such as this are likely to be few and far between, as the number of logical acquirers and acquisitions is very limited. The most common mergers will still continue to be in-market deals in which operations can be centralized without being far from either player.

In addition to in-market mergers, there will also be some acquisitions of remote branch networks by the money center banks. A good argument can be made that such acquisitions will actually increase competition and service rather than reduce it. For example, in California, the Wells Fargo/Crocker Bank and BofA/Security Pacific mergers were both in-market transactions that resulted in significant branch closings and layoffs. If Citibank was allowed to acquire a large bank in this market and run it as part of the parent New York bank, it would be a much stronger competitor than the present Citibank FSB—originally a failed thrift that regulators asked Citibank to take off their hands when no California institution wanted to buy it.

Because most mergers have been in-market, they have generally resulted in the closing of duplicate branches and heavy staff cuts, and thus strong local opposition has been common. In some cases, rather than being allowed to close branches and eliminate competition, state and federal authorities have required banks to sell off some merged branches to other banks. Such actions, however, have not slowed the pace of mergers and acquisitions, and some analysts predict that by the millennium, \$300 billion-\$400 billion banking giants will dominate the economy.

Although this prediction is probably correct, it is also irrelevant. With the top 300 banks (2.5% of the total number) controlling nearly 65% of the nation's bank deposits as of the end of 1991, and many banks having over \$100 million in assets, it is clear that a small number of large banks already dominate the industry—to the extent that it can be dominated. However, in 1984 the top 300 already held 60.5% of the total deposits, so the much-heralded merger and consolidation trend has done little to increase the net concentration of power and assets at the top of the industry.

Despite local opposition, it seems likely that there will be more acquisitions of mid-sized banks (with assets in the \$1 billion to \$10 billion range) by recently established or new super-regionals. Such mergers clearly can be rational from a cost-cutting standpoint. Once merged, the larger institution's competitive position can be improved by the opportunity to offer a broader range of banking services and to spread the cost of more-sophisticated computer systems over a broader base.

On the negative side, in terms of local and human impacts, some analysts see as many as three-quarters of a million bank employees laid off through such mergers in the next decade. However, considering the demographic factors noted above, it seems unlikely that there will be such a 50% reduction in banking employment within the next ten years.

INPUT's view is that the merger/acquisition trend is largely overblown. It is clear that there are economies of scale in processing, and that there are more branches than necessary in many large cities. However, the increase in outsourcing options provided by the virtual bank model makes it possible for a large number of small banks to survive as profitable niche operations. Consolidation will largely occur at the upper end of the business as restrictions against multistate branching are relaxed and regional and money center banks continue to merge and acquire other institutions. As previously noted, branch expansion will continue despite mergers, largely due to demographic factors.

6. Outlook for Regulatory Reform

As alluded to earlier, banking regulatory reform in some form seems inevitable, although the final shape is anything but clear. Unfortunately—or maybe fortunately—during the first part of 1994 public attention has been focused on issues of crime and gun control, health care reform, and the personal finances of the Clinton family. This has left little room in the media space and public consciousness for complex and mundane issues such as banking reform and restructuring of the financial services industry. The following paragraphs examine some of the more important regulatory activity.

a. Capital Ratios

Other than establishing the mechanism for bailing out S&Ls, the most important regulatory reform of the last several years is the increase in capital reserve requirements for banks and thrifts. Institutions of all sizes have been required to increase the levels of their reserves, with the amount of reserves being based on the risk profile of the institution's investments. Several different measures of capital have been defined, based on various balance sheet parameters, and target levels have been set for each of these different measures.

Institutions are classified into one of five categories, based on how close they come to meeting all of these capital targets. These categories are:

1. Well-capitalized
2. Adequately capitalized
3. Under-capitalized
4. Significantly under-capitalized
5. Critically under-capitalized

An institution's business flexibility is based on which category it falls into. For example, any bank that is not classified as well-capitalized must:

- Pay higher FDIC insurance premiums
- Get regulatory approval for accepting brokered deposits
- Get regulatory approval for bank mergers

Banks that are significantly under-capitalized come under close control by regulators, who place limits on asset growth and operating procedures. Regulators are now required to take control of any institution that becomes critically under-capitalized.

b. FDIC Insurance Fund

In August 1993, the FDIC's Bank Insurance Fund balance was \$6.8 billion—up substantially from the negative \$5.5 billion balance as of June 30, 1992. However, the fund still has a long way to go before it is restored to its target level of 1.25% of insured deposits (it now stands at 0.35%).

As noted earlier, the low-interest-rate environment of the last several years has helped both banks and their customers, reducing the originally anticipated number of bank failures and allowing banks to increase their

levels of capitalization more rapidly than planned. Risk-adjusted insurance premiums are a major motivator for banks to improve their capitalization and clean up their balance sheets. Since October 1993, the healthiest banks pay \$0.23 per \$100 of deposits, while weaker banks can pay up to \$0.31 per \$100—a difference of nearly 35%.

Although original FDIC projections assumed that the insurance fund would reach its target level in the year 2001, current projections assume that the target will be reached in 1997 or 1998, at which time the insurance premiums could be reduced substantially, falling to \$0.11 or less by the end of 1998. Depending on the growth of insured deposits, this could reduce bank expenses by over \$2 billion per year by the turn of the century.

c. Industry Restructuring

Over the years, other financial institutions have entered the market for commercial loans, siphoning off the banks' traditional asset base and pushing banks into other, riskier areas such as commercial real estate and LDC loans. The results of these new ventures were painfully obvious over the last several years. More recently, the low-interest-rate environment has caused a massive disintermediation, with many traditional bank depositors (e.g., consumers) shifting to money market funds, mutual funds, etc., offered by the banks' less regulated competitors.

Both the chairman of the Federal Reserve Board and the Comptroller of the Currency have expressed concern about the regulatory straitjacket that keeps banks out of related businesses and allows competitors to nibble at both the asset and liability sides of banks' balance sheets. The recent LDC and real estate debacles demonstrate the danger of allowing competitors to "skim the cream" while leaving banks with a portfolio of only the most difficult lending risks and no offsetting low-risk businesses.

With President Clinton's penchant for compromise and negotiation, there is little chance that the administration would push for a radical reform of the system. Treasury Secretary Lloyd Bentsen has indicated his preference for a slow, market-based evolution to a "level playing field" for all competitors. And the one administration proposal to combine all bank regulators into one agency is strongly opposed by the Chairman of the Federal Reserve, Alan Greenspan.

In all likelihood, the same basic list of issues will continue to be addressed in an ad hoc and piecemeal fashion. In the short run, there will be continuing debate over the limits to interstate branching and the future roles of the many federal regulatory agencies, including the Federal Reserve, Treasury, Comptroller of the Currency, FDIC, Office of Thrift

Supervision, and National Credit Union Administration. Further out are the more fundamental structural issues of the Glass-Steagall wall separating banking and underwriting, and the wide variety of issues regarding a level playing field for all parties—including uniform standards for capital adequacy, insurance, and tax treatment for all categories of institutions.

7. The Shifting Credit Card Business

Scope of the Credit Card Market—U.S. charge volumes for the top four credit card brands (Visa, MasterCard, American Express, Discover) increased approximately 12% in 1992, a significant decline from the 12%-28% growth rates experienced in the 1983-1990 timeframe, but nearly double the disappointing 7% growth experienced in 1991. Still, during 1992 the market for these non-proprietary cards was large by any measure:

Total U.S. charge volume:	\$413 billion
Year-end receivables:	\$202 billion
Transactions	5,115 million
Cards outstanding	313 million

There is still significant growth potential in the credit card market, as each of the major brands works to increase the number of merchants that accept their card. Current merchant growth areas include grocery stores and fast food chains.

Despite increasing levels of on-line authorization (over 70% of Visa's credit card transactions are now authorized electronically) and other security measures, MasterCard and Visa fraud losses increased by over 21% between 1991 and 1992. Bad debt losses increased by 14% over the same one-year period. This is a significant reduction from the 60% increases in fraud and bad debts experienced between 1990 and 1991, when the recession hit revolving credit with a vengeance.

Nonbank Presence—In all, the credit card business is less and less controlled by traditional banks; at the end of 1992, the nonbank share of the general-purpose card market was just over 25%. Yet, for the big-bank players, credit cards are a major and important business. Among the banks, increasingly it is a big-bank service. The trend has been for small and midsized banks to sell their credit card businesses and apply capital and reserves elsewhere.

Exhibit II-8 shows the year-end 1992 receivables of the top ten credit card issuers. Despite the fact that one bank—Citicorp—holds nearly one-third

of the \$112.5 billion held by the top ten, the percentage of the market held by the four largest nonbank issuers (Greenwood Trust/Discover, Household Credit Services, AT&T Universal and American Express/Centurion) is nearly equal to the total held by all the remaining banks.

Exhibit II-8

The 10 Largest Credit Card Issuers (by outstandings)

Rank	Bank	Outstandings (\$B) 1/1/93	Percent Share (1992)	Percent Share (1993)
1	Citicorp	35,458	32.55	31.51
2	Discover Card/Greenwood Trust Co.	16,386	14.07	14.56
3	The Chase Manhattan Corp.	9,837	9.66	8.74
4	MBNA America	9,218	7.85	8.19
5	First Chicago Corp.	8,328	6.85	7.4
6	BankAmerica	8,306	9.1	7.38
7	American Express Centurion Bank	6,898	7.11	6.13
8	AT&T Universal Card Service Corp.	6,600	3.64	5.87
9	Chemical Bank Retail Card Services	5,784	5.63	5.14
10	Household Credit Services Inc.	5,713	3.55	5.08

Note: Values have been rounded

Source: Company reports

Among the nonbanks, the fastest growing issuers are AT&T with its Universal card, and Household Credit Services, which issues the GM card. In terms of outstanding receivables, the well-established AT&T Universal card grew by nearly 75% from 1991 to 1992, while the newer Household's growth exceeded 50%. However, in terms of growth in cardholders, the Household GM launch substantially outpaced AT&T: over one million cards issued in the first month of the program, and a total of 4,000,000 accounts with 5,500,000 cards issued at the end of the first six months. The success of the GM card spawned imitators, including the Citibank/Ford card and other programs from GTE and General Electric.

Meanwhile, the older affinity card business is still providing stable earnings and growth for issuers such as MBNA. Approximately 115 banks now offer affinity cards supporting over 3,000 organizations with over 35 million cardholders. University, college and alumni groups are popular affinity targets, as are a variety of nonprofit organizations. The airline affinity cards are also proving to be a stable and attractive marketing base for both parties.

Over 350 financial institutions have now issued nearly 100 million debit cards. These cards are usable at nearly 50,000 ATM machines nationwide, many ATMs overseas, and nearly 60,000 on-line debit POS terminals in supermarkets, gas stations, etc. Not surprisingly, the largest debit card base is in California, where Bank of America, Wells Fargo and First Interstate each have huge statewide branch systems and own thousands of ATMs.

The increasing popularity of bank-issued credit and debit cards, including MasterCard's Maestro and Visa's Interlink brands, has cut into the market for private-label credit cards. Many of these issuers (primarily the major retailers and oil companies) have seen little growth—or even a shrinkage—in their charge volume and outstandings. For many of them, the only bright spot is the reduction in fraud and credit losses due to better economic times.

The greatest concentration in the card business is occurring in the merchant acquisition and processing sides of the business. In 1992, the top 25 merchant acquirers accounted for nearly two-thirds of the total U.S. card billings, compared with less than 50% just one year earlier. In some cases, acquirers are buying the portfolios of other institutions. In other cases, bank mergers are creating larger single portfolios without any significant increase in the total number of merchant outlets. Indeed, despite the push by Visa and MasterCard to expand into new markets such as health care, grocery stores, movie theaters and parking garages, the total number of merchants served by the top 25 acquirers has stayed near 1.6 million for the last several years.

On the processing side, there has been dramatic growth in the volume handled by EFT processors. Although the number of ATMs has remained relatively stable for the last several years, there has been substantial growth in the number of POS terminals and their associated transaction volume. For example, although a supermarket like Safeway is only one merchant, its entry into the on-line POS debit/credit arena added at least 10 terminals to each of over 200 stores.

Although the EFT transaction volume is increasing rapidly, economies of scale are constantly pressing on the smaller networks. Several networks have disappeared as banks consolidated their activities into larger switches. With scale economies driving pricing down, and many of the smaller switches experiencing decreases in their traffic volume, this consolidation will certainly continue over the next several years.

8. Securitization

Securitization is the packaging for reselling and/or trading of blocks of loans of all types. The lending agency that packages loans in this way

earns a fee for the packaging and moves loans off the financial books, thus freeing the capital for lending—and securitizing—once again. Securitization has been a popular tool for all kinds of financial institutions seeking to get assets off their books in response to pressures of capital adequacy and the demand for additional lendable funds.

A major reason for the S&Ls' loss of mortgage business has been the increasingly widespread securitization of mortgages through GNMAE, FNMAE, and others, thus permitting low-capital mortgage brokers and others to compete easily, often under lower cost structures.

Although in recent years many banks jumped into securitization of credit card portfolios, this trend has slacked off as profits have improved and banks are better able to hold on to the high profits available from a well-managed portfolio. This has allowed banks to shift their focus away from securitization and toward bulk disposal of distressed properties and loans as an alternative way of raising limited amounts of cash and cleaning up their balance sheets at the same time.

9. Brokerages

Over the last several years, as CD rates continued to drop to below 3% and the Dow continued to climb to nearly 4000, both small and large investors turned to stocks, bonds and mutual funds in search of ever-increasing capital gains. Despite many problems in other sectors of the economy—including all of the uncertainties associated with the 1992 election and the new administration's economic plan—bank and other stocks have fared well and new issues have appeared in record numbers. In general, retail brokers did very well.

Despite this trend, however, brokerages still make money on trading volume and are still concerned about long-term trends in volume. Several issues continue to worry brokers:

- Increasing sophistication and cost consciousness on the part of individual investors continues to fuel the growth of discount brokerages and constrain the growth of traditional full-service retail brokerages.
- The continuing growth of institutional holdings (e.g., pension funds) and mutual funds decreases the total number of trades, and also reduces commissions as more and more of the trading volume is accounted for by large block trades.
- The growth of off-exchange markets, electronic crossing, and other similar innovations leads to reduced business for exchanges and specialists, as well as reduced commissions for both brokers and specialists.

- Trading is becoming an increasingly complex activity, with real-time mathematical modeling, graphic displays, multimedia data feeds, large databases, etc. becoming the norm. This requires continuing emphasis on technology planning and expenditure.
- Continuing regulatory pressure, including the June 1, 1995 shift to T+3 settlement and the drive to immobilize securities, is also increasing the need for technology planning and expenditure.

Offsetting these worries are other trends which may increase the volume and profitability of the brokerage business. As noted above, Initial Public Offerings (IPOs) have taken off in recent months. As economic restructuring continues and new firms are born out of the creative destruction of defense industries and military bases, there should be an increase in this kind of activity. In addition, as banks gain increasing powers to compete in the securities arena under the administration's policy of establishing a "level playing field," securities firms may gain additional powers to enter traditional banking markets or use parts of the banking industry's support structure (e.g., routine access to the Federal Reserve discount window).

10. Nonbank Financial Services Firms

As mentioned in several of the sections above, a strong new class of banking industry competitors is emerging: nonbank financial services firms. Whether in credit cards, lending, or nondepository interest-bearing accounts such as money market funds, more and more nonbank institutions serve the financial needs of individuals and businesses today. These institutions generally are well capitalized—often by industrial-sector parent firms—and generally operate free of most of the regulatory constraints imposed on banks and S&Ls. There is every reason to believe that nonbanks will continue to win business from traditional banking firms in the future—and thus will invest relatively more heavily than the rest of the sector in information systems and information services.

C

Technology Trends Affecting the Banking and Finance Industry

Exhibit II-9 summarizes the information technology issues that must be addressed by the banking and finance industry in the 1990s.

Exhibit II-9

**Information Technology Issues Facing
the Banking and Finance Industry**

- Management of Established Technologies
- Evolution of Imaging
- Expert Systems
- Downsizing and Outsourcing
- Disaster Recovery
- Distributed Systems and Integrated Databases
- Communications
- EDI/EFT
- Workstation/PC Convergence
- Home/Remote Banking
- Debit Cards and Smart Cards

1. Management of Established Technologies

A number of information technologies are already well established in the banking and finance industry. The most significant of these are noted below and share a common attribute: each automates a traditionally labor-intensive function, improving both service to the customer and financial institution labor costs. Although these are mature in the sense that they now have almost universal acceptance, they are all still evolving as the technology continues to evolve.

Platform Automation—The value of platform automation is now almost universally accepted in the banking industry, and the technology is in general use now after a relatively slow start. This technology cuts costs by allowing platform officers to access all of a customer's records at one time, update files as needed, and eliminate much paper-based data entry. More sophisticated PC-based workstations allow officers to generate letters and mailings, perform spreadsheet "what-if" analyses with the customer, and verify signatures.

Touch-Tone/Voice Response Phones—Similarly, it is becoming very common for banks, brokerage firms, and other financial institutions to use voice response systems to allow customers to obtain balances, records of checks cashed and deposits, and other information from touch-tone phones. Customers are also able to perform certain transactions over the phone, such as transferring funds between accounts, paying bills, purchasing stocks, etc.

ATMs—ATMs are now accepted alternatives to routine transactions with human tellers. The early competitive advantages that some banks gained by being ATM pioneers have now largely evaporated, and ATMs are essentially a competitive necessity. Newer generations of ATMs allow an increasing range of transactions, and some experiments are now under way with ATMs that can read deposited checks, issue travelers' checks, and even serve as two-way TV terminals, allowing customers to speak directly with bank officers to transact business.

2. Evolution of Imaging

For some time, imaging has been considered the hot new technology of the 1990s. The following paragraphs discuss the issues relevant to the banking and finance industry's use of imaging technologies.

Types of Imaging Systems—There are two general types of imaging systems in use by financial institutions:

- File-folder systems, used in areas such as loan processing, letter of credit, etc., provide the capability for multiple users to simultaneously capture, examine and update multiple types of documents associated with a single transaction, or "file folder."
- Item processing systems are used primarily for high-volume transaction capture and handling (e.g., check processing).

Motivation—In both types of systems, the primary sales pitch is typically cost savings. In practice, however, the savings are sometimes difficult to measure and the goal elusive. A better justification is usually found in improved quality of service:

- Better, faster and more flexible access to documents improves productivity while giving customers better service.
- Corporate services such as account reconciliation and investigation of questionable items can be substantially improved by providing custom reports generated from images of the processed checks.

There is still much experimentation in the area of custom statements using processed images. At this point, the issue is more one of marketing and customer education than technology.

Costs and Benefits—For file-folder systems, the cost/benefit is increasingly attractive. Because these are typically departmental systems that require little interface to other applications or networks, they can be easily implemented and are often available on a turnkey basis. But for item-processing systems, cost and performance are still major stumbling blocks.

A major advantage of check imaging is supposedly the capability to automatically recognize the check amount. Though this feature works reasonably well with computer-generated checks, there is a countervailing drive to replace such corporate payments with ACH funds transfers, thus diminishing the long-term utility of this feature. The performance problem is with handwritten amounts. So far, the promised performance rates have not been achieved, requiring a higher than planned rate of manual data entry for these checks. For a bank with a predominantly retail customer base, this makes the cost very high in proportion to any potential benefits.

Standards—To date, few banks are using imaging systems. Among nonbanks, American Express has led the way for several years by using an imaging system based on networked PCs and workstations, not a mainframe. Besides costs, continuing obstacles to imaging's growth include lack of standards and lack of full integration with other banking systems.

3. Expert Systems

Despite rosy predictions in the mid-1980s, expert systems have proved more difficult to implement and less valuable in practice than anyone anticipated. The two areas in which there has been the most use to date are credit analysis and trading.

Credit scoring—the analysis of a credit application to determine if a loan or credit line should be granted—is one of the oldest and most successful applications to date. Several companies (e.g., Fair Issac) currently sell systems that incorporate their proprietary approach to credit screening. Most of these are rule-based systems. In some cases the rule tables are supplied by the vendor; in other cases, the experience and judgment of local credit officers is built into the tables by a complicated interview/analysis process. Most of the new systems also integrate data from credit reporting services such as TRW into the decision process.

Credit card transaction authorization is another expanding area for expert systems. American Express pioneered this area with its workstation-based Authorizer Assistant, which helps speed approval of credit card purchases. Visa and several banks are exploring the use of neural networks to help detect unusual purchases, alerting the authorizers to possible fraudulent use of cards before they have been reported stolen. One of the key advantages of neural networks is that they can learn from experience: Each cardholder's spending patterns can be automatically analyzed for deviations from the norm, and no human experts or manmade rules are required to build the systems.

Neural networks are also finding increasing application in trading systems, where they are used to analyze market trends and detect arbitrage opportunities. In this area, a wide variety of expert system approaches and techniques is constantly being evaluated by the experts who work for banks and brokerage firms. Finally, the area of handwriting analysis and visual pattern recognition is a leading-edge area for expert system research, as manufacturers of imaging systems attempt to improve their ability to read handwritten checks.

4. Downsizing and Outsourcing

The dominant organizational concepts for the early 1990s seemed to be downsizing and outsourcing, driven by the need to cut costs and raise capital. Now that bank profits have improved and most institutions are close to their capital adequacy targets, these pressures seem to have abated and there is less of a sense of urgency about these decisions.

Consolidations—Late in 1990, Manufacturers Hanover Trust set the pace for cost control through computer operations downsizing by announcing it would consolidate eight data centers into just two, with major cuts in staff. In recent years, there have been several significant mergers, including Manufacturers Hanover and Chemical Bank, Bank of America and Security Pacific, and NCNB and C&S/Sovran. Each of these mergers was based on the same rationale: to buy revenues and cut costs. All of them have resulted in significant consolidation and cost savings in the area of branches, operations and headquarters staff. Future mergers will result in similar consolidations.

Outsourcing/Processing Services—In previous years, several very large and many mid-sized banks turned to outsourcing. At \$700 million over the life of the contract, the IBM/Continental Bank deal of September 1991 is the largest recorded to date. Other major deals include First Fidelity Bank Corp (\$450 million) and Signet Bank (\$300 million). However, the recent acquisition of Continental by Bank of America puts this deal in jeopardy, and other mergers have also undone previously announced outsourcing arrangements.

Although outsourcing will still remain a viable option for small to medium-sized banks that are not large enough to develop and manage leading-edge technology on their own, many of the larger institutions are re-examining the benefits afforded by outsourcing and attempting to achieve some of the same results on their own, using consultants who specialize in data center consolidations and systems integration. The key issue for these large users is the possible loss of control over their technology—becoming locked into the vendor's strategy and capabilities when the institution might want to pursue another approach.

Smaller banks, of course, are also able to use recent advances and cost decreases in minicomputer and client/server technology to install turnkey systems that eliminate the unit-transaction-based fees charged by processing services vendors. This kind of jockeying will continue for the foreseeable future as these two service sectors compete for the low end of the market.

5. Disaster Recovery

Disaster recovery planning has been required of all federally supervised financial institutions for many years. As financial institutions have become increasingly dependent on increasingly complex technology, regulators have expanded the scope of their examinations and required increased scope and depth in institutional contingency plans.

The Federal Financial Institutions Examination Council (FFIEC), composed of representatives from key regulatory agencies, is responsible for developing standard policies and guidelines to be followed by financial institution management and regulatory examiners in certain common functional areas—including information systems management and overall contingency planning. FFIEC guidelines are issued by each of the parent regulatory agencies and apply to all institutions supervised by:

- The Federal Reserve Board
- The Comptroller of the Currency
- The Federal Deposit Insurance Corporation
- The Office of Thrift Supervision
- The National Credit Union Administration

Two important guidelines relate to disaster recovery. The first, issued July 12, 1989 by the Comptroller of the Currency, covers overall contingency planning. In a broadly sweeping statement, the OCC indicates that:

"At a minimum, these [contingency planning] strategies must address:

- centralized and decentralized operations,
- user department activities,
- communications systems (data and voice),
- bank functions linked to service bureaus, and
- recovery plans by the service bureaus."

These guidelines provide a two-page outline of the contingency planning process, and stipulate that each institution's Board of Directors must review the contingency plans on an annual basis and document the results of the review in Board minutes.

The second guideline, issued on April 29, 1993 by the FDIC, titled *Switches and Network Services in Retail EFT Systems*, contains similar provisions regarding Board responsibility for review and compliance.

6. Distributed Systems and Integrated Databases

As in other industries, many banking and finance firms are placing decreasing emphasis on minicomputer-based distribution of information systems functionality and increasing emphasis on client/server networks tied cooperatively into mainframe databases and legacy processing systems.

To support relationship banking, firms are finding RDBMS technology essential for implementing comprehensive, relationship-based customer account records. Banks have increasingly come to believe that integrated customer information systems provide competitive advantages by attracting customers (business and personal) with single-statement summaries of financial status. Although banks also talk about the advantages of being able to cross-sell additional services whenever there is an interaction with the customer, this is often more a matter of repeating vendor hype than actual line practice. In any case, such systems clearly require the integration of separate account-based databases.

Similarly, RDBMSs are the key to implementing the transition from operational automation to strategic, competitively oriented information systems, including executive information systems. However, despite the years of discussion about the advantages of executive information systems, many senior banking executives have yet to endorse the benefits of a carefully crafted executive information system, and IS executives feel that they still have an uphill battle to implement such applications. This is especially true in small and medium-sized banks, where many of the managers still communicate by phone and written memos, and E-mail is not yet a part of their daily routine. Many IS managers feel that a major step forward will be taken when senior bank officers have a terminal or PC on their desk and use it in their daily activities.

7. Communications

Most banks are increasing their use of local-area networks (LANs), often in client/server configurations, and the larger ones are now integrating

multiple LANs, connecting them with wide-area networks (WANs), and centralizing control and backup operations. So far, there seems to be little movement toward integrated systems digital network (ISDN) communications technology.

The improvement in worldwide communications services offered by major telecommunications vendors has also led many banks to abandon their private networks in favor of virtual networks run on regular public circuits. Network management is also increasingly contracted out to telecommunications vendors, leaving the banks with a small core of professionals to monitor the quality of vendor service and plan the evolution and integration of communications networks with the bank's information processing strategy.

8. EFT/EDI

Electronic funds transfer (EFT) is well established among banks, with a wide variety of systems and data formats responding to specific application needs (e.g., credit card networks, ATM networks, the Automated Clearing Houses (ACH), FedWire, CHIPS, SWIFT, etc.). Some banks expected electronic data interchange (EDI) to follow EFT in the next wave of popular applications, and at one time there was a proposal for banks to offer full EDI services through the ACH network in competition with the current network vendors such as CompuServe, GE, etc. However, in addition to strong political pressure against this proposal by the threatened vendors, the overall involvement of banks in the EDI arena is also limited somewhat by lack of full compatibility among three separate standards, all in use by the banking and finance industry: ANSI X.12, UN/EDIFACT, and the separate standards and operational constraints of the National Automated Clearing House Association. There is also the question of how banks would provide and manage the connection to the many non-financial client departments associated with the full range of EDI services.

The main area of overlap between EDI and EFT is in providing details of financial transactions to the receiving party. Current ACH capabilities are limited in this regard. FedWire and other systems have virtually no such capability; and the control, timing and security features of EFT systems add significant cost and overhead that is not required for transaction support information (e.g., lists of invoice numbers paid). INPUT's judgment is that EDI and EFT systems will continue to be separate, although some standards will evolve allowing linkage of the banking system's financial transaction (EFT) to the supporting details transmitted via EFT.

9. Workstations/PC Convergence

For many years, high-speed, high-powered workstations have been serving the fast-response, complex needs of specialized brokerage traders, such as those in international currency trading. More recently, such workstations have been used in banking for complex functions such as cash management. These workstations have typically been based on the UNIX operating system.

However, as the PC has evolved in power with new chips such as the Pentium, the PowerPC, and the Alpha, and new, more sophisticated operating system capabilities continue to be developed, the distinctions between PCs and workstations are rapidly eroding. Microsoft is working aggressively on the development of a specialized set of banking industry interfaces to the Windows operating system, while UNIX developers are expanding the sophistication of their user interfaces. Operating systems themselves are being made more portable, so that users can choose to run a specific operating system/application combination on an ever-widening set of platforms.

The overriding trend in this arena is that applications and operating systems will continue to consume more horsepower, and there will be a convergence of both hardware and operating system capabilities to run any combination of applications required by the user.

10. Home/Remote Banking

To date, there has been little market enthusiasm for home PC-based banking. Though some banks—notably Bank of America—continue to run a small PC-based home banking system, many other banks have shut down pioneering and experimental systems. The latest trend appears to be telephone-based systems, with or without new display telephones. These simple systems provide many of the capabilities required by the home user without the complexity and overhead of a PC interface. No one is going to acquire a PC for the sole purpose of home banking, and only a fraction of the pioneering individuals who have a modem and use a home computer for business reasons have become users of home banking systems.

Two brokerage houses—Schwab and Fidelity—offer PC-based account management and trading systems to their customers. These systems provide far more sophisticated capabilities than any home banking system would ever need, and are therefore attractive to a select group of clients who value these capabilities and cannot get them any other way.

Home banking via PC will ultimately become more popular as more homes have PCs with modems so they can travel the new "information

superhighway." It is probably this development, more than anything, that will make the difference.

11. Debit Cards and Smart Cards

Debit cards—where the user's bank balance is debited immediately through a communications link—are being used in more ways at more and more outlets. Several trends are operating in parallel here:

- The expansion of POS terminals and networks that accept standard bank ATM cards
- The development of special debit cards by the Visa and MasterCard associations. From a merchant's standpoint, there is no difference between credit cards and debit cards: both carry the same guarantees and can be handled the same way by the same terminals. However, from the issuing bank's standpoint, there is more risk with the credit card (because the merchant payment is guaranteed even if the cardholder ultimately defaults). Therefore, banks are more likely to issue debit cards than credit cards to their less creditworthy accounts.

Because they respond to different consumer needs, it is likely that both credit and debit cards will coexist in the future, as it is unlikely that debit cards will ever replace traditional credit cards.

Following on the pioneering work in Europe (for example, by the French telecommunications authorities), Visa and MasterCard are evaluating smart cards that would carry electronic balances on implanted chips, for instant debiting as an alternative to cash. The first application of these cards is likely to be with groups of merchants in a specific, closed area (such as a ski resort), where handling cash is an inconvenience and the overhead of electronic authorization of many small credit/debit card transactions would be prohibitive.



Information Systems

Based largely on primary-research interviews with selected banking and finance firms, plus secondary research using other industry sources, this chapter examines the global issues driving the IS function, outlines how the banking and finance industry uses information systems, and details the key business and technical issues facing information systems management, as well as the impacts of key new technologies. In addition, a review of organizational control of, and budgeting for, information systems provides the foundation for a discussion of key objectives and plans for information systems departments within banking and finance institutions.

A

Global IS Issues

As the mid-1990s approach, five key issues, as noted in Exhibit III-1, are influencing the course of information systems in the banking and finance marketplace and virtually all other industry segments. First are the structured, planned changes that are occurring in both the industry and the data processing function. These changes, often characterized as "business re-engineering," are being driven by the economy, regulation, technology, competition and other pressures. The re-engineering process forces individual firms to consider how they currently perform their core business activities, and how they might restructure both internal processes and external relationships to improve their overall performance.

Among other considerations, this analysis forces an evaluation of how and where the IS function is performed, including what portions of it (up to and including the total IS function) can be most cost effectively performed outside the institution via outsourcing. Consolidation of data centers and IS staff previously distributed to individual business units provides another alternative to outsourcing. Mergers and general budget

constraints drive both IS consolidation and general organizational downsizing, as institutions seek to reduce the inherent redundancies of merged organizations and trim the excess resources that accumulate during periods of growth and relative technological stability. Finally, open systems and networking are making it easier to become part of the national and global marketplace and take competitive advantage of the many new applications and service offerings that such standards and networking resources encourage.

Exhibit III-1

Banking and Finance Marketplace— Global IS Issues for the 1990s

- Re-engineering
- Outsourcing
- Data center consolidation/restructuring
- Downsizing
- Open systems/networking

To see how these global issues affect a specific industry sector, it is necessary to understand the characteristics of that sector. The following section outlines the IS environment of the banking and finance sector in terms of the applications processed by that sector.

B

IS Applications Environment

The applications environment of the banking and finance industry may be segmented into three categories of systems:

- Generic and cross-industry applications to support standard business functions
- Internal applications to support the institution
- External applications to support specific lines of business

Generic and cross-industry applications used by banking and finance firms are common to all industries, and are described in other INPUT reports. The other categories are industry specific. Exhibit III-2 lists some of the major applications that are unique to the banking and finance sector. The characteristics of these applications are described below.

Exhibit III-2

Banking and Finance—Industry-Specific IS Applications**Internal Applications**

- Banking Infrastructure
 - Branch Automation
 - Customer Information File
 - MIS/Financial Reporting
 - Tax/Regulatory Compliance
 - Other Miscellaneous
- Treasury Management
 - Asset/Liability Management
 - Portfolio Management

External Applications (Product/Service Support)

- Payment/Deposit
 - Check Processing
 - Retail Electronic Transaction (ATM/Debit Card) Processing
 - Deposit Processing
 - Time Deposit Accounting
 - Corporate Trade Payments (ACH, etc.)
 - Account Reconciliation
 - Corporate Treasury Management
- Retail Loan
 - Personal Loans
 - Mortgage Loans
- Credit /debit Card
- Commercial Loan
 - Corporate Loans
 - Corporate Money Market
 - Equipment Leasing/Industrial Finance
- Corporate Trade Finance (Letter of Credit, etc.)
- Trust and Agency
 - Corporate Trust/Agency
 - Pension Trust
 - Personal Trust
- Brokerage
 - Trading
 - Retail Brokerage Support
 - Back Office (Clearing/Settlement, Customer Records)

1. Banking Infrastructure

These applications generally support multiple products, services and customer groups, or provide information required to manage the institution.

- *Branch automation* systems support tellers and "platform" (marketing and customer service) staff, providing on-line access to customer records and facilitating administrative tasks such as account opening/maintenance, transaction authorization, correspondence, etc.
- *Customer information files* integrate data from account-oriented processing systems (checking, savings, mortgage loans, etc.) to provide an overall picture of a customer's relationships with the institution, facilitating decisions such as credit extension and fee calculation, and highlighting opportunities for cross-selling other products and services.
- *MIS/financial reporting* applications provide data for internal management to assess institutional performance by customer group, product line, branch, etc.
- *Tax/regulatory compliance* systems support the wide variety of external reporting and control requirements of a financial institution.

2. Treasury Management

These applications support the overall control of the institution's financial position.

- Asset/liability management systems track the maturity and interest rate profiles of all the institution's assets (loans and securities) and liabilities (deposits) to ensure that they are properly matched and any imbalances are properly hedged.
- Portfolio management systems control the institution's portfolio of investment securities (bonds, T-bills, etc.).

3. Payment/Deposit

Payment/deposit applications support all forms of transaction and deposit processing activity—retail and corporate—except credit card transactions.

- *Check processing* includes the physical handling of checks (clearing) and the account maintenance for both retail and corporate customers of all transaction-oriented accounts.
- *Retail electronic transaction processing* covers transactions that are initiated by the consumer through electronic terminal devices.

- *Deposit processing* is the physical handling of deposits, from the single check received over the counter to the armored cars full of checks and cash that arrive at a bank after a long holiday weekend.
- *Time deposit accounting* includes the entire spectrum of non-transaction deposit products offered by financial institutions, from passbook savings accounts to jumbo CDs and overnight corporate money market deposits.
- *Corporate trade payment* covers both the transmission and receipt of payments by corporations, whether paper or electronic. It includes EDI, lockbox, retail ACH payments and debits (e.g., Social Security deposits, pre-authorized insurance payments).
- *Account reconciliation* provides electronic records of checks paid so firms can reconcile bank statements with their accounts payable records.
- *Corporate treasury management* systems allow corporate treasurers to monitor daily account balances, move funds between accounts, and invest/borrow as needed, all via terminals in the treasurer's office.

4. Retail Loan

Retail loan applications fall into two major categories:

- Personal loan processing covers everything except mortgage loans. This includes both unsecured lines of credit and collateralized transactions such as car loans.
- Mortgage loan processing includes all types of fixed and variable rate programs, different forms of collateralization, and the management of loan pools which may be sold in secondary markets.

5. Credit/Debit Card

Such applications include both issuer (cardholder) and acquirer (merchant) processing, including interfaces between banks, processors, networks and associations (Visa, MasterCard).

6. Commercial Loan

Commercial loan applications vary depending on the nature of the lending activity and the associated collateral.

- *Commercial loans* often involve large dollar amounts and complex, customized legal arrangements that require detailed tracking of the borrower's financial status. They may also be syndicated, requiring the "lead" institution to act as a loan servicing agent for the participants that each own a piece of the loan.
- *Corporate money market* activity may involve the bank both as a buyer of commercial paper and as an issuing agent on behalf of its corporate customer.
- *Equipment leasing/industrial finance* involves the finance of goods or equipment, where the items financed are used as collateral for the loan.

7. Corporate Trade Finance (Letter of Credit)

These activities include a combination of credit extensions, international payments, and the tracking and analysis of complex documentation.

8. Trust and Agency

Trust and agency activities typically involve the institution acting on behalf of someone else to manage and process funds.

- *Corporate trust/agency* includes stock and bond transfer, dividend/interest payment, etc., on behalf of corporations and governments. It can also include such activities as processing parking tickets.
- *Pension trust* involves the management of all kinds of pension funds, from individual IRAs and Keoghs to large corporate retirement plans.
- *Personal trust* involves the management of a diverse set of assets and payment obligations on behalf of individuals.

9. Brokerage Systems

Brokerage systems support three main categories of users:

- *Trading* systems include all of the electronic information services that provide data feeds and information displays (stock quotes, etc.) to traders and brokers. Analytical systems are also an important component.
- *Retail brokerage support* systems provide brokers with access to both market data and customer records, and allow brokers to enter orders on-line.

- *Back office* systems handle the transfer of securities and the maintenance of customer account records. They also handle the brokerage firm's own securities portfolio and its own market activities (securities lending, etc.).

Another perspective on the banking industry can be gained by examining the transaction volumes associated with some of these applications.

Exhibit III-3 outlines the processing capabilities of a leading bank as of January, 1993. One notable statistic is that paper transactions (checks) still outnumber electronic transactions by a 5-to-1 ratio. In an operation of this scale, there will obviously be an opportunity for cost savings as image processing technology matures even if the check volume were to be cut in half. Another notable point is the relative automation of the data centers: fifty percent of the tape mounts no longer require manual intervention, reducing both the need for operators and the potential for operator error.

Exhibit III-3

Processing Capabilities

- 20 million checks processed per day
- 1.2 million bank card drafts processed per day
- \$300 billion dollars accounted for daily
- 4 million on-line transactions processed daily at \$60 billion
- 700,000 transactions worth \$47 billion processed daily for corporate customers
- 15 million statements generated a month
- 50,000 workstations on-line daily
- 1,800 local-area networks on-line daily
- 5,000 ATMs on-line 24 hours a day
- 110,000 customer phone inquiries handled per day
- 600,000 tape mounts per month, 50% of which are automated using SILOs

Source: INPUT Industry respondent

C

IS Response to Environmental Forces**1. Overall Cost Reduction Strategies**

Exhibit III-4 notes some of the strategies pursued by large banks and other financial institutions to either contain or reduce costs in response to the environmental pressures discussed in Chapter II. In general, these institutions are asking themselves:

- Should we be doing everything we are doing?
- Can we do it cheaper?
- Can someone else do it for less?

Exhibit III-4

**Cost Reduction Strategies Applied by
Financial Institutions to the IS Function**

- Reduced product development/customization
- Standardized on fewer application systems
- Reduced maintenance expenditures
- Reduced internal DP staff
- Reduced use of outside consultants
- Consolidated networks and data centers
- Outsourced applications and/or operations

2. Cost/Benefit Analysis

As part of the process of controlling costs of existing operations, many financial institutions are questioning the basic justification of some previously "sacred" expenditures. Even though bank profits have risen sharply in the last three years, some critics have argued that many banking systems investments—ATMs in particular—have lowered bank profits, not raised them, by introducing new costs without corresponding financial benefits.

This is, of course, the "road not taken" argument: It is impossible to know how much branch costs would have risen without ATMs. Costly new products and attempts at product differentiation are other areas in which extensive investments do not appear to have provided significant rewards to the banks themselves. However, while these innovations may not have helped bank profits, they have arguably delivered better service at lower cost to the consumer. In an industry as fragmented and

competitive as the U.S. banking industry, it is a fair assumption that no institution can long maintain a competitive edge or profit margin through product innovation, and most of the benefits of cost savings and quality improvement ultimately get passed on to the customer.

It appears, therefore, that bank information systems have frequently become costly, competitively driven investments that have not provided either significant competitive advantage or large returns on investment. Consequently, the emphasis for bank investments, now and in the near future, is on demonstrating quantifiable benefits before money is allocated, and then managing the investments to ensure that benefits are achieved in practice. This applies not only to systems, but to all other categories of expenditure as well.

3. Cost-Cutting Efforts

By restricting the scope of systems development and maintenance activities, and concentrating on improving the cost/performance equation in delivering core functionality to users, many finance industry managers have managed to handle ever-increasing transaction volumes while actually decreasing their operating budgets. One of the reasons for this is the constantly increasing cost/performance of hardware, coupled with changes in the pricing strategies of software vendors (see Chapter IV for more on this issue). However, the traditional cost-cutting tactics listed in Exhibit III-4 are also a significant factor.

In this exhibit, consolidation refers to internal efficiencies, as opposed to those resulting from mergers or acquisitions. Decreases in the use of contract programming, layoffs (and attrition), system standardization and reductions (where possible) in maintenance expense are cost-control efficiencies that banking—and virtually all other industry segments—found to be prudent as the economic impacts of the recession affected a larger and larger portion of the economy.

These consolidation efforts represent the reversal of an earlier trend toward decentralizing systems responsibility in large organizations to the level of the individual business unit. Though this earlier decentralization provided improved responsiveness to user needs, it also created substantial redundancies, inefficiencies, and interapplication communications problems. The current trend in large organizations is toward corporate development and operation of centralized utility services (processing centers, databases, and networks) that support decentralized business applications development and processing.

4. Outsourcing

As a result of cost consciousness and a desire to return to their core banking business, institutions are continuing to shift to processing services or outside systems operation of data facilities. In addition to direct operating-cost benefits, such arrangements generally free bank capital, which still must be husbanded carefully in the face of regulators' requirements for higher capital ratios.

The extent of outsourcing varies considerably by function and application. For example, high-cost, capital-intensive leading-edge, and technology-intensive activities are particularly good candidates for processing services or systems operations outsourcing: EDS and Perot Systems are currently estimated to handle over 50% of the total U.S. check processing volume, and there are fewer than 100 vendors that handle the processing for Visa's 6,000+ U.S. members (banks, S&Ls and credit unions).

Other vendors, such as Systematics, have long offered clients a flexible mix of traditional IS outsourcing options, including applications software, processing services, and combined platform/applications management. Finally, going beyond the bounds of the IS department, some vendors are taking over entire client departments and running them on a service bureau basis (e.g., Arthur Andersen running a bank's entire accounts payable department).

Exhibits III-5 and III-6 present the results of a recent *American Banker*/Ernst & Young survey, showing what percent of the industry outsources specific types of activity.

Exhibit III-5

Line of Business Processing

Activity	Already Outsourced	Considering Outsourcing	Not Outsourced Considering
Credit Card Merchant Processing	52	3	45
Trust Processing	39	—	61
Mortgage Processing	33	13	54
Student Loan Processing	28	8	64
Mutual Fund Processing	26	1	73
Cash Management	6	1	93

Source: *American Banker*/Ernst & Young Survey

Exhibits III-6

Functional Processing

Activity	Already Outsourced	Considering Outsourcing	Not Outsourced Cosidering
Credit Card Issuance	34	-	66
Secutirties Safekeeping	20	-	80
ATM Driving/Switching	14	15	71
Data Center	14	2	84
Network Operations/Management	13	8	79
Applications Development/Maintenance	4	18	78

Source: American Banker/Ernst & Young Survey

5. Downsizing

Some banks are taking advantage of increasing mainframe cost/performance and technological advances to downsize from multiple data centers. In addition, many banks are starting to strip away peripheral functions (e.g., data entry, simple queries) from mainframe systems and place them on distributed client/server systems. However, relatively few banks are undertaking the up-front investment to downsize by moving mainframe-based processing systems to networked PCs and workstations.

In addition to the initial investment, a major obstacle to using the PC environment is that the kinds of operations now on the mainframe, for most midsized and larger banks, cannot yet be handled effectively on the smaller platforms, even given recent advances in processing power. Although PC MIPS capacity has increased at a dramatic rate, these systems are still subject to a three-dimensional "bandwidth" limitation, having inadequate processor memory space, I/O channel capacity, and DASD capacity to handle large-scale banking applications.

Current PCs and workstations are not designed to handle the large volume of data (measured in Gigabytes) required by the operations of a large bank. Nor do they possess the level of sophistication in operating system and database software required to support complex banking applications. Finally, most of the high-volume peripherals that are integral to core banking functions (such as check-processing systems) are available only for mainframe attachment. A new class of such systems—designed specifically for use with networked PCs and workstations—will be required before downsized systems can supplant mainframes in banks.

In addition to hardware limitations, there are significant software limitations to effectively downsizing mainframe applications. There are few standards yet in the arena of development tools, and it is hard to assemble a suite of tools which will support the entire applications development process, from specification through implementation. Mainframe-level capabilities for security, database administration, etc., are generally still lacking in the PC/workstation environment. And relatively few systems staff are well versed in the rapidly evolving technology maelstrom of object-oriented languages, GUIs, etc. The process of developing a major new application in the client/server environment is still one suited only for patient pioneers with deep pockets.

6. Technology

Several key technology issues facing banking and finance systems managers have significant business implications as well. In the cost-controlled environment faced by most banks today, new technological investment is seldom a primary planning topic. The most important issue, typically, is finding new ways to use existing systems more efficiently, including opportunities to downsize operations. However, once the downsizing or outsourcing decision is made, the potentially disruptive effects must be managed carefully.

The apparent short-term exception to limits on systems investment is funding the transition from older bank database systems to relational database management systems (RDBMSs). There are several key motivators for this shift. First, in situations in which a bank has taken over or merged with one or more other banks, there is the need (near- or long-term) to integrate each bank's separate processing systems. Implementation of an RDBMS can aid this integration.

Second, bank processing systems have historically been developed on a product-line basis, processing individual records for each account on the system. Individual clients may have none, one or many accounts on any given system, and any integration or interface between systems is typically handled by transferring files from one system to another. The early implementations of the Customer Information File (CIF) concept generally relied on just such extracts from individual application files. Loading these extracts into a relational data structure facilitates the kind of integrated account analysis that is required to implement "relationship banking" service levels throughout the organization. Such analysis is useful for routine transaction processing by tellers, credit approval and marketing by platform officers, and other activities such as cross-selling promotions and direct mail campaigns.

Finally, requests for executive information systems, to better manage the business in the competitive environment of the 1990s, generally require RDBMS technology.

7. Disaster Recovery

As mentioned earlier, there is increased regulatory emphasis on disaster recovery. This has led processing services firms that specialize in this area to develop new and more sophisticated capabilities to support their clients. Among these capabilities is transaction shadowing for real-time systems, a situation in which transactions processed by the client's data center are simultaneously sent via dedicated communications lines to the disaster recovery center, so that there is backup immediately available for all transactions processed up to the moment of failure. In addition, backup power supplies and alternate communications facilities (e.g., VSAT satellite links) are becoming increasingly powerful and flexible, providing easy access to alternative processing sites when the primary processing site is nonfunctional.

The primary weakness in today's disaster recovery capabilities is the general lack of support for local-area networks and distributed applications. Because many of these systems were developed on a departmental basis with minimal involvement from the central IS function, the traditional planning and discipline associated with large central sites is often missing. Even if the data is adequately backed up, there is seldom an adequate plan for moving operations to an alternate site with an equivalent configuration of networked PCs or workstations—and a capability to link back to the other systems to which it is connected. This problem will only get worse as more applications are built on client/server systems, and the overall combination of servers, LANs and WANs becomes the basic infrastructure on which the institution's primary applications reside.

D

Impact of New Technologies

Some new technologies are affecting the way banking and finance firms design and implement their information systems.

1. RDBMSs

RDBMSs, especially IBM's DB/2, are already installed or are being installed at many large and midsized banks. Given the competition for deposits versus money market funds and other nonbank investments, many banks and S&Ls want to emphasize relationship banking, which

takes into account *all* of the customer's business with the institution. Relationship banking makes installation of an RDBMS a competitive necessity.

RDBMS vendors are also developing better links between their mainframe packages and PCs. IBM is now implementing a PC version of DB/2; there is a PC version of FOCUS; and Oracle is being ported to more and more platforms. There is also a new generation of database front-end tools being developed for PCs. These tools (e.g., Microsoft's Access) allow a user to specify database queries in a single standard way, no matter where the data resides or how it is organized. The tool then translates the query into one or more requests, depending on where the data resides and what the source database structures are. After assembling the data from various sources, the tool makes it available to the user in a standard form, as well as allowing it to be further translated from this standard form into a variety of target database formats (e.g., Paradox, xBase, Lotus 1-2-3, etc.).

2. Imaging

Imaging, at this point, appears to be the technology that everyone is familiar with, everyone is studying, but no one has yet fully implemented. Although there are certainly cost and technology issues involved, incomplete implementation is also partly a matter of style and perceived customer value.

Over a decade ago, Amoco Oil Company pioneered capturing digitized images of customer signatures and notes from its charge slips and printing them on the customer statement. Taking this one step further, American Express pioneered imaging of the entire charge slip record. By contrast, Visa and MasterCard did away with moving paper and started sending electronic data many years ago.

American Express stayed on a paper-based "country club billing" operation for several reasons:

- Customers supposedly liked it.
- AMEX felt it conveyed an old shoe, "upscale" image.
- Unlike the bank cards, AMEX had no financial institution partners to work with in capturing and truncating the drafts.

Now, however, some of these advantages are becoming moot. With the advent of electronic draft capture for small retail transactions and the computer-based interfaces from large merchants, such as Macy's, and travel and entertainment vendors, such as hotels, airlines and rental car companies, most of the "imaged" charge slips on an AMEX bill are simply

paper-wasting reproductions of data that could be printed on one or two lines of an itemized statement.

Aside from the small-scale, departmental "file folder" systems being offered by turnkey vendors, several types of imaging systems are being examined by most sizable banks. Variations include imaging of checks and automatic computer recognition of the check amount during proof and encoding operations, moving the images to statements (rather than further handling of the paper checks), direct output of lengthy documents to image systems rather than paper (e.g., transaction journals, account ledgers and other audit trail items), and capturing the many nonstandard documents required for mortgages and other loans in image systems. Three goals for imaging systems are flexible access, cost reduction and the satisfaction of legal record retention requirements.

The increasing maturity of three technologies—networking, imaging and client/server computing—is finally leading to rapid growth in distributed departmental "file folder" imaging applications. These applications require high-performance LANs and graphical workstations, both of which have been significantly reduced in cost over the last several years. And the growing understanding and acceptance of the client/server paradigm, together with new implementation tools, has made it easier to develop and implement customized imaging applications.

One major stumbling block for imaging is fixed costs: Complete systems for item processing applications range as high as tens of millions of dollars. Today's cost-cutting environment tends not to support such investments without clear proof of short-term payback—which, at this time, is not readily apparent for most large-scale imaging applications.

As noted in the previous chapter, the technology supporting item processing imaging applications has not advanced as fast as originally projected; both IBM and UNISYS are behind schedule in delivering workable products with high throughput rates—i.e., with high percentages of items passing automatic amount recognition. Until this situation improves, item processing imaging systems will be acquired primarily by large institutions with large corporate account bases, where the majority of checks processed are easily readable, computer-generated items. Large service bureau check processors such as EDS and Perot Systems can also be expected to invest in item imaging equipment, thus providing smaller institutions with some of the benefits and marketing advantages of imaged checks (e.g., for retail customers, imaged statements instead of returned checks; for corporate customers, specialized account reconciliation services).

3. Expert Systems

In the mid-1980s, many observers saw expert systems as a bright new systems star for banking, especially for credit scoring, loan authorization, and credit card charge approvals. Although examples of all such applications exist, there appears to be relatively little enthusiasm among banks for moving further with expert systems, except in the area of credit card charge approval, where neural network technology is providing new capabilities.

A few software companies have captured the market for straightforward credit scoring applications, providing the analytical and implementation support necessary for their use. In other areas, however, the bottom line seems to be an extremely complex implementation process, coupled with a lack of documentation of hard-dollar payoffs, and the as-yet undemonstrated ability of most systems to deal effectively with enough of an application area to cost-justify their use.

4. EDI

Electronic data interchange, the direct computer-to-computer transfer of information such as orders and deliveries, as well as information about payments, continues to grow steadily outside of the banking sector. Although all banks routinely use electronic ACH (Automated Clearing House) facilities and wire transfers, few apparently see themselves in future roles as significant EDI intermediaries. This stems from three basic factors:

- The already-entrenched position of EDI service bureau vendors outside banking, and the fact that over 95% of EDI traffic is unrelated to payments
- The fact that the ACH network is not oriented toward handling nonfinancial information, and the late-emerging capability of ACH to support detailed remittance advice data
- The complexity and cost of developing the business/systems interface to provide clients with a proper financial EDI interface

In addition, the market is small, and although it is growing (in terms of volume) at 50% per year, it is still not a lucrative business for banks. As a result, most banks are offering payment services primarily to satisfy important customers, not to make money. At this time, slightly more than 300 banks have the ability to do EDI processing, but only 50 or so are actively providing such services. Major providers include First Chicago, Mellon, First National of Detroit, Chase and Wells Fargo.

5. Workstations

For several years now, high-powered workstations have become the vehicle of choice for traders in banks and brokerage firms to monitor fast-moving financial markets, run complex analytical models, and execute transactions in stocks, money market instruments and financial derivatives. High-powered PCs running OS/2 have also become popular as drivers of funds transfer systems, and for other networked applications. As hardware costs drop and the capabilities of PCs and workstations converge, such applications will proliferate. To date, however, the banking and finance industry has found little other use for standalone workstation technology, and future applications remain unclear.

The main trend in workstation/PC technology seems to be driven by the shift to client/server applications, and the increased use of high-end PCs to support the larger and more complex applications and operating systems overhead required of the networked/client/server/GUI environment. In today's market, the minimum configuration for a networked PC seems to be a 486 with 8Mb of RAM. Many IS managers are struggling with the question of what to do with older 386 machines: Should they be upgraded with more memory to run the ever-burgeoning Windows system, or replaced with newer generations of hardware? This issue will continue to frustrate IS managers as PCs and workstations increasingly become multi-tasking networked devices instead of simple standalone desktop tools.

6. Tools

Finally, CASE, 4GLs and RDBMSs may have noteworthy roles to play in many institutions' evolution from multiple merged-bank systems to integrated systems, but this will not be a rapid transition. CASE in particular will have to deliver more effectively on its longstanding promise to help information systems managers re-engineer old systems before its application will become widespread.

The key problem with CASE is its lack of definition and standardization—a function of the immaturity of the technology and the market. Vendors at the 1994 DBExpo show in San Francisco showed a bewildering array of products that combined various aspects of CASE tools, RDBMS interfaces and 4GLs. Most of these tools seemed to be presented as abstract, standalone packages with little thought of how they would interface with the user's broader IS environment. There was little apparent interoperability between these products, and it would be very difficult to determine how to go about selecting an integrated suite of tools to satisfy any specific user requirement.

E

Organization and Budget

Although banking and finance industry budgets in general are highly centralized, the larger the institutions and the more decentralized the business units, the more decentralized the budgets. Even in the larger institutions, however, this trend is slowing down or reversing, as data centers and networks are consolidated to improve control and cut costs.

Chargeback systems are common but not typical of the majority of firms—again, this is more an issue of size than anything else. Even where there is no formal chargeback to business unit P&Ls, however, there is an increasing trend to cost out specific products and services, and to try to use this costing in setting fee schedules for services. Obviously, the more the business moves in the direction of fee-based income, the more important internal costing (and chargeback systems) will become.

Overall, corporate budgets in general, and bank systems budgets in particular, are tight. As noted earlier, this pattern holds for brokerages as well, but many nonbank financial services firms are enjoying higher profit levels and are investing more heavily than the sector average in information technology. Industry estimates for 1994 IT budget growth ranged from 5%-6% for all industry categories, to 3%-6% for banks and financial services. INPUT estimates the 1994 budget growth at 5% and expects 1995 to be at the same or a slightly lower rate until a strong, sustainable recovery is evident.

F

IS Department Objectives

Based on background and findings presented throughout this report, Exhibit III-7 summarizes the objectives and plans of the banking and finance industry's information systems managers. The exhibit provides guidance for vendors planning products and services for this industry.

Exhibit III-7

Objectives and Plans of Information Systems Managers

- Budgets
- Outsourcing and other information services
- Disaster recovery
- RDBMSs
- Imaging

1. Budgets

Vendors selling to information systems managers in the banking and finance industry must keep in mind that although profitability is up, regulatory requirements for higher capital ratios are in force, bankers are paying higher FDIC insurance premiums, and bank IS departments are still motivated to hold costs down. Therefore, budgets continue to be tight, and across-the-board cost controls are in place at most banks. Brokerages are in a similar situation, and management is still concerned with costs after waves of post-crash layoffs and other belt tightening.

The budgetary bright spots are the less-regulated, nonbank financial services firms. Nonbanks generally have not suffered as much from the recession or from large amounts of poorly performing LBO or real estate loans, and they are not subject to the extra burdens of mandated capital ratios and increasing FDIC payments. Nonbanks are also more likely than the banks or brokerages to be in growth situations that call for increased investments in information systems and services.

2. Outsourcing and Other Information Services

The bright side of the budget crunch, of course, is that the demand for outsourcing and other information services continues unabated. Banks, in particular, have always been strong users of third-party processing services, and many of them are moving beyond routine yearly evaluations of outside processing and taking the action required to shut down costly in-house systems. Increasingly—far more than in the past—they are accepting proposals from a third party to take over data centers and/or other systems operations (and often staffs) in exchange for a long-term contract guaranteeing yearly savings. This is especially true for the smaller and mid-sized institutions, which have realized that technology cannot give them a sustainable competitive advantage; for institutions that have experienced massive cost overruns in developing their own systems; for institutions that are under pressure from regulators for operating deficiencies; and for institutions that are focusing on rebuilding

battered loan portfolios and do not have the management depth to deal with managing IS resources as well.

This situation has also produced significant opportunities for systems integrators, who can help the bank with complex consolidations or system/application upgrades. In particular, the development of new client/server applications is an area in which the banks themselves have so little in-house expertise that outside resources are almost always required.

There is little indication that nonbank institutions—brokerages or nonbank financial services firms—are particularly open to additional outsourcing. Though there is substantial jockeying between vendors of quote systems and other front-office and trading interfaces, the outsourcing of brokerage back-office operations is more stable. The small brokers generally do it and the large ones don't. And unlike the banking arena, where few banks serve as outsourcing vendors for other banks, several of the larger full-service brokerages handle the processing for smaller "introducing brokers."

Network operations is generally the only area in which large brokers use outsourcing. Because they were running large, complex multivendor networks, often with international links, some large brokers have turned over much of their network operations to a single vendor.

3. Disaster Recovery

As noted, federal regulations have long mandated planning for disaster recovery. Recent major disasters—from earthquakes and floods to bombings—have pointed out the inadequacy of much current disaster planning. In particular, these situations have driven home the following points:

- Disasters are seldom isolated events affecting a single firm. More often, they are environmental situations affecting multiple firms and multiple elements of the infrastructure (power *and* communications *and* transport, etc.).
- In such circumstances, disaster recovery and support services may themselves be damaged, or overwhelmed by overlapping demands from multiple clients.

FFIEC guidelines provide wide latitude for the use of consultants, disaster recovery firms, etc., to address these issues, so there is no excuse for the IS manager to be uninformed or unprepared. Significantly, the institution's responsibility extends not only to its own operations, but to the operations of any and all vendors supporting its operations, *no matter what the failure mode*. For example, users of turnkey systems must

consider the consequences of the vendor's bankruptcy on their ability to modify the system to accommodate ongoing regulatory changes (e.g., tightened funds availability schedules under Reg. CC).

In the previous world of centralized operations running proprietary systems, contingency planning and disaster recovery were much easier. The current trend toward decentralized/distributed operations based on open, networked systems adds a dimension of complexity that many institutions do not fully understand. It may be that regulatory pressures will restore the primacy of the central IS function, if only to ensure that, if and when disaster strikes, someone can put it all back together again.

4. RDBMSs

RDBMSs are already in place, being implemented, or being planned by most banks. A main motivator is the assistance RDBMSs can provide in integrating records after a merger or takeover. Another motivator is the competitive pressure to offer relationship banking that ties together a client's multiple accounts. In terms of competitive positioning, the client becomes less likely to be lured away by another bank's offer of single statements and other integrated-account services. From the standpoint of service profitability, the bank with records organized in an RDBMS can use the data base connections to spot opportunities and expand the scope of account relationships with its best customers.

5. Imaging

Imaging technology is still being investigated at some level by most banks—whether for their own operations or through service bureaus. The reality, however, appears to be that funding to purchase such systems—at least those item processing systems that are at the top of the line in price and functionality—will be lacking at most banks in the near term. The current cost of image-based item processing systems is such that only the largest banks have the scale of operations to make them pay. However, to the extent that vendors can offer small or mid-sized file folder systems providing reasonable payback at low transaction volumes and for low front-end investments, there will continue to be a good short-term market opportunity.

A key advantage of file folder systems is that they provide an opportunity for significant re-engineering of paper-intensive operations such as mortgage and letter of credit processing. Because these activities are among the last to become thoroughly computerized, and will still have to deal with large volumes of incoming paper for the foreseeable future, they provide one of the last pockets of potentially significant cost savings available from further automation.

6. Research

Other than imaging systems, most leading-edge information technologies will get only research (without development) attention in the short term because of the tight budgetary situation. As mentioned earlier, the exceptions likely will be found among the nonbank financial services firms, and certain specialized functions in the fast-changing world of brokerages.

Historically, American Express has led the way in image-based statement rendition, and a number of brokerages have pioneered the industry's effective use of networked workstations, graphical information displays, and expert systems. Similar leading-edge work may be done by these sectors in other new technologies over the next few years, although the prime candidates now appear to be extensions of recent work in those same areas.



Information Services Market

This chapter discusses the markets for information services in the banking and finance industry. Information in this chapter draws on statistics presented in Chapter I, and trends and issues discussed in Chapters II and III, to summarize forecasted growth of the markets for information services.

One key item discussed is the trade-off between prepackaged solutions—such as processing services, applications software, and turnkey systems—and custom solutions that involve consulting or external systems development and systems integration support.

User expenditure forecasts are provided by industry segment and by product/service sector. Assumptions driving the forecasts are presented. Note that these forecasts do not include functional general-purpose information services, such as those in support of the human resources function, general accounting, or for generic planning and analysis. The markets for these types of information services are presented in INPUT's cross-industry MAP reports, rather than the industry-specific reports.

Section A, *Overview*, discusses the overall size and growth rate of the banking and finance industry's expenditures for information services.

Section B, *Product/Service Sector Analysis*, segments the market's expenditures into INPUT's seven standard product/service sectors.

Section C, *Industry Segment Analysis*, provides a restatement of this forecast in terms of the major market segments within the banking and finance industry. These segments are:

- Commercial banks
- Savings and loan institutions (S&Ls)
- Credit unions
- Brokerages and other financial services firms

A

Overview

After a flurry of well-publicized activity at the start of the decade, outsourcing of bank and S&L operations seems to have slowed down somewhat. As noted below, the uncertainty of the times puts both users and vendors in a quandary regarding future investments in information technology. In addition, the twin pressures that drove many users to outsourcing—low profits and increasing capital requirements—have abated in these last several years.

The key business and technical forces that will affect the banking and finance industry's use of information services during the next five years are summarized below. They are consistent with INPUT's 1993 report.

1. Driving Forces

Capital Allocation—A key force driving many commercial banks and S&Ls toward outside information services has been the need to cut costs and generate increased earnings to satisfy the regulatory requirements for higher capital ratios. Switching to either a processing service or an outside systems operator can move a banking institution's capital out of the data processing center and back into the bank's business. Also, many systems operations contracts include guaranteed annual savings over current costs. Though these pressures have lessened somewhat as industry profits have risen and banks are reaching their new capital targets, there are still many institutions for whom earnings remain a problem—especially those in areas such as California that are suffering from the effects of defense cutbacks and lackluster real estate markets.

Turnkey System Price/Performance—A different product/service sector—turnkey systems—is benefiting from recent price/performance advances in minicomputer systems, and the increased sophistication and performance of PC-based systems. These advances allow many turnkey vendors to offer small and mid-sized financial institutions significant power for in-house processing at much better hardware prices than in the past. Note, however, that such turnkey business often will come at the expense of the processing services on which such users relied in the past. In the most basic sense, it is this attractively priced in-house processing resource that is driving the "insourcing" trend for small and mid-sized banks.

RDBMSs—Many commercial banks and S&Ls are finding RDBMSs an appropriate technology to address two key issues: the competitive need to implement relationship banking (which ties together records of all a

customer's accounts) and the need to integrate multiple systems and records in the current wave of banking industry mergers. Vendors of the basic RDBMS software environments and of the add-on software packages that extend RDBMS functionality—especially those that work with IBM's DB/2—are seeing such new opportunities.

Mergers and Acquisitions—Bank mergers and acquisitions continue to have mixed effects on the various information services delivery modes. In general, any merger is going to cut back on the overall use of standard applications solutions. Although processing services tend to be the hardest hit because of their volume-sensitive pricing, vendors in all service categories can suffer in mergers. In the case of applications solutions and processing support services (processing services, turnkey systems, applications software and systems operations), an acquiring bank is likely to cancel the outsourcing arrangements of its new subsidiaries and assume responsibility for this processing. Indeed, the reduction in combined processing costs is one of the typical justifications for these mergers.

The beneficiaries of merger activity are primarily firms that can provide specific assistance to the acquiring company in managing the integration of the target banks into their new parent. If new systems are needed, bank applications software vendors may see acquiring banks choosing to buy rather than build new and larger systems. Professional services firms and systems integrators will see the merging banks reach out for advice on systems modification or evolution and for full-scale contracts to integrate old and new systems. Also, systems operations vendors should keep a watchful eye on mergers to identify ripe opportunities to sell the advantages of outsourcing the expanded systems department functions.

Regulatory Compliance—The large number of small to medium-sized commercial banks and S&Ls are being driven harder and harder to maintain their systems' compliance with fast-changing banking regulations and reporting requirements. Packaged applications software vendors, processing services vendors, and system operators all can point out that they offer a central, economical approach to keeping the institution up to date—and in legal compliance—with such changes, so that banks can concentrate on the banking business.

Competition—Nonbank financial services firms will continue to be in relatively strong competitive positions (versus the traditional banking industry) in the near future, unless now-unforeseen new bank-like regulations are imposed. Many nonbanks are already strong users of network services, and act as both users and providers of processing services for credit card authorization and transaction processing. Nonbanks will prove to be good customers for:

- Banking applications software adapted to their specific needs
- Professional services to help nonbanks modify software or build custom systems to meet their unique needs
- Integration of expensive and complex new technologies (perhaps even imaging, which nonbanks can better afford than banks can, as demonstrated by American Express) into their systems
- Resources that contribute to operating systems in a cost-efficient fashion—to keep data processing costs stable even in the face of growing business and systems requirements

2. Inhibiting Forces

In contrast, a number of forces, discussed below, are inhibiting banking and finance firms' use of information services.

Uncertainty—The uncertainty factor is hardest to deal with. The overall impact of defense cutbacks and base closings, restructuring and cutbacks in the federal government, and the revamping of the nation's health care system, is still anyone's guess. However, it is clear that these effects will not be uniformly distributed across the country. And to the extent that banks are located in troubled areas, or have portfolios concentrated in troubled industries, the effects will vary considerably from institution to institution.

With the future directions of the overall economy—and banking in particular—still in doubt, caution by bankers can be expected to limit changes in how they manage internal information systems and contract for outside information services. Vendors, in turn, need to be flexible in considering various scenarios and business planning frameworks:

Overcapacity and Product/Service Sector Trade-offs—The industry continues to suffer from two kinds of overcapacity: too many institutions, and too many facilities. It is obvious that the current trend toward commercial bank consolidations will continue as long as regulatory authorities will allow, boosted by already established timetables for breaking down barriers to interstate banking. Although specific opportunities will emerge from this downsizing of the industry, the absolute number of sales prospects for information services vendors will drop. Meanwhile, competition for their business will increase as users are presented with a greater variety of options for standardized application solutions.

Brokerage Industry—The brokerage firms still represent the industry wild card. Although the market's performance has been satisfactory in terms of both price levels and volumes for the past several years, many

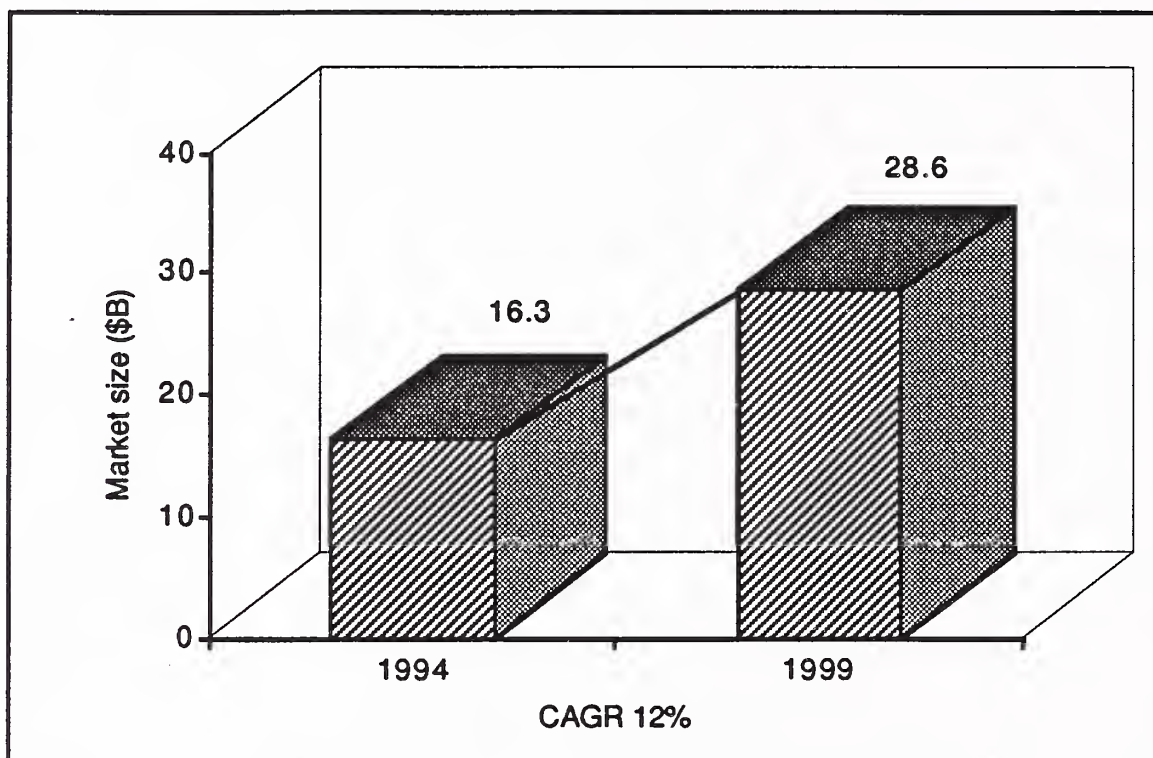
view the future shape of the brokerage business as questionable. Although another long-term expansion and bull market will come sooner or later, the strong trend toward book-entry securities will continue to reduce back-office employment in brokerages. Brokerage management will remain cautious for some time and, following the example of credit cards, more of the brokerage industry's transaction processing may be outsourced to large vendors with significant economies of scale. Individual firms will, however, continue to pioneer the use of technologies like expert systems for specific functions such as currency trading.

Nonbanks—Similarly, nonbank financial services firms—some affiliated with major industrial firms and some diversified only in financial services—represent another uncertainty for information services firms. Historically, nonbanks have strongly favored in-house solutions, including building their own software rather than buying packages. As noted earlier, nonbanks tend to be larger institutions that generally have more money available for investment in information technology than commercial banks and S&Ls. Some, notably American Express, have been real pioneers. However, there have been very few cases in which outside information services vendors have successfully penetrated this market and maintained profitable, ongoing relationships.

Based on these driving and inhibiting forces, and other factors detailed below, INPUT projects the 1994-1999 information services market for the banking and finance industry as shown in Exhibit IV-1. As noted, INPUT forecasts that the overall expenditures in this market will expand from slightly more than \$16.3 billion in 1994 to more than \$28.6 billion by 1999.

Exhibit IV-1

Banking and Finance User Expenditures Forecast, 1994-1999



Year-by-year detail is shown in the forecast data base (Appendix A). In addition to the driving and inhibiting forces discussed above and the product/service sector-specific trends outlined in the next section, a number of industry segment-based trends are at work behind this forecast. For example, some commercial banks should represent short-term growth markets for processing services and systems operations, for the reasons detailed earlier. The majority of S&Ls, however, also have a sufficiently viable business and operations base that changes in their use of information services will be more the exception than the rule. The exception will be where pure cost-cutting is the motivator—one result could be an increased movement toward systems operations. Credit unions are already strong users of processing services, and little change is expected. The forecast for nonbank financial services firms' use of outside information services will continue at about the same level for the reasons noted earlier.

In terms of year-to-year growth rates, there is a general assumption that current uncertainty regarding the future of the economy and the banking industry will ease over the next several years. The economy will eventually move away from its current state of confusion and enter a period of recovery followed by stability. Regulatory uncertainties should settle, consolidation and new ownership patterns will continue, and the re-establishment of stable banking industry operating conditions will lead

to a period of renewed growth in the new banking business—whatever shape it takes.

Despite political hopes and current prognostications, INPUT does not expect to see a significant and sustained economic turnaround in either 1994 or 1995. The recent actions of Federal Reserve Chairman Greenspan are clearly intended to maintain a pattern of carefully moderated growth, and the Fed is clearly more interested in low inflation rates than fast economic growth.

This banking and finance industry forecast assumes that the pieces for recovery will be in place and the first signs of a concrete recovery will appear in mid-1995. The year 1996 will be one of stronger economic activity, driven by election-year politics and the first real effects of the new economic reforms. Assuming another Democratic victory in 1996, the years 1997 and 1998 should see a return to more stable and consistent growth patterns. Vendors will see little change in user expenditures in 1994, with moderate growth occurring as the economic outlook stabilizes and recovery materializes.

In summary, everything is affected by the economic climate. When it improves, the recession is clearly over, and a period of recovery and growth can begin. There will then be a gradual return to the traditional growth patterns for information services offerings.

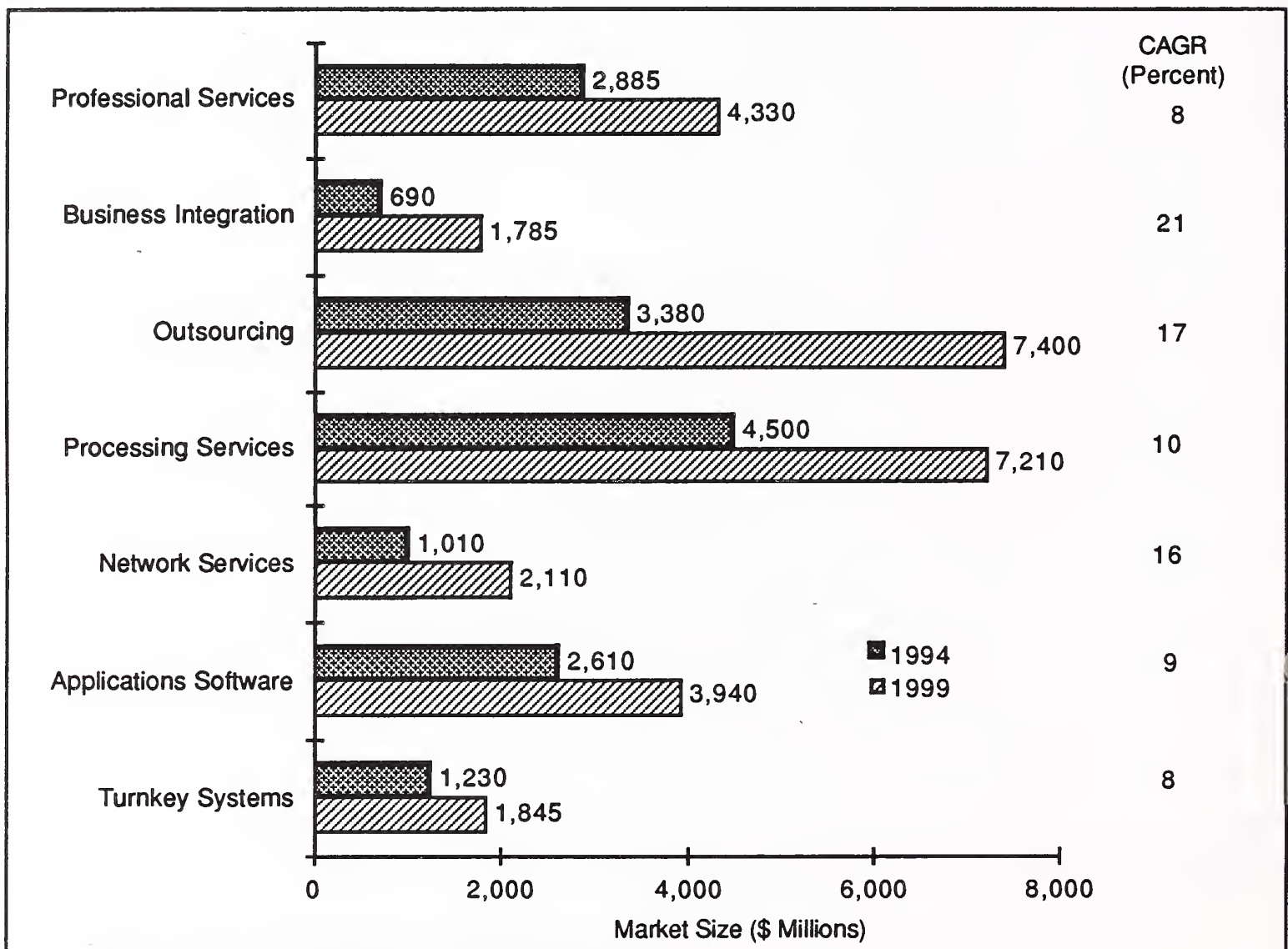
B

Product/Service Sector Analysis

As shown in Exhibit IV-2, there are significant differences projected in the five-year growth rates for the information services product/service sectors to the banking and finance industry. Forecast assumptions by sector are noted in the following paragraphs.

Exhibit IV-2

Banking and Finance User Expenditures Forecast by Product/Service Market, 1994-1999



1. Processing Services

The banking and finance industry's use of processing services has been strong relative to that of other industry sectors. Such use has always been heaviest by smaller and mid-sized commercial banks, S&Ls, and credit unions. However, during the forecast period, some commercial banks and S&Ls will merge into larger banks, which generally can be expected to bring processing services in-house for consolidated economies of scale.

Aside from merger-related factors, cost-related issues will be a significant determinant of processing services use. There will be some increased use of processing services by commercial banks and S&Ls of all sizes, which

will shift to processing services to redeploy their capital away from in-house systems and toward meeting higher capital-ratio requirements. However, there will be a countertrend whereby some midsized and small commercial banks and S&Ls will find turnkey, minicomputer-based systems to be an increasingly cost-effective alternative to outside processing services' usage-based charges. This countertrend will be most important when the bank or S&L is growing, however—and not when capital is short.

There will be a constant increase in the use of credit cards and debit cards for all types of transactions—traditional merchant sales, ATMs, POS, etc. At the same time, there will be an even greater increase in transaction volumes for third-party card processing services, which will continue to enjoy highly competitive economies of scale and continue to acquire the portfolios and processing responsibilities of banks and other card issuers. Another activity with similar economies of scale is check processing, an area in which two vendors already handle over 50% of the total U.S. transaction volume.

All brokerage firms are heavy users of network services to deliver stock quotes, news, etc., to brokers and traders. The majority of terminals on brokers' desks are supplied by the large quote vendors such as ADP, Quotron and ILX. In addition, many smaller brokerages are heavy users of processing services, serving essentially as marketing and research organizations and outsourcing their back-office operations. With the trend toward elimination of stock certificates and back-office paperwork, an increasing number of small and medium-sized brokerages are likely to turn to outsourcing of their transaction processing operations.

Nonbank financial services firms typically have not been heavy users of processing services, and no change is expected in this pattern. However, for all types of financial institutions, increased focus on disaster recovery should increase the demand for backup services, including the associated testing and training needed to ensure the effectiveness of the backup plan.

Exhibit IV-2 shows the 10% CAGR expected in processing services. Based on the trends outlined above, the 1994 expenditures of \$4.5 billion are expected to grow to \$7.2 billion by 1999.

2. Turnkey Systems

By bundling the required hardware and software into a single package, turnkey systems provide an easy-to-implement solution for many midsized and community commercial banks and S&Ls. This solution is at the price, of course, of generally providing less flexibility for users, thus placing them more at the mercy of the turnkey vendor. Turnkey

systems do, however, generally provide the user with more flexibility than some processing services vendors' "one-service-fits-all" approach.

Whether the turnkey application is functionally oriented (e.g., mortgage processing) or a full-scale integrated package, the vendor typically supplies documentation and training as part of the contract, and provides continuing updates that maintain regulatory compliance and allow clients to provide competitive new financial products and services as they enter the market. This frees the smaller institutions from the impossible task of competing on the basis of technology, and allows them to focus instead on marketing and customer service.

Exhibit IV-2 shows the growth expected in turnkey systems, which is driven primarily by a new generation of minicomputer- and client/server-based systems for banks and S&Ls. These systems increasingly offer cost-effective alternatives to outside processing services, especially for growing institutions wishing to avoid the use-sensitive transaction costs inherent in a processing service. Perhaps more important, the newly cost-effective turnkey systems significantly increase the level of control available to user organizations.

INPUT forecasts the growth for this delivery mode at an 8% CAGR, going from more than \$1.2 billion in 1994 to more than \$1.8 billion in 1999. This is somewhat lower than last year's forecast of a 10% CAGR for the 1993-to-1998 timeframe. The primary reason for this reduced growth rate is the assumption that increasing numbers of turnkey systems will be delivered as part of a systems integration contract that links multiple vendor systems into a bankwide processing network.

3. Applications Software Products

The banking and finance industry has always made substantial use of packaged software products, especially among the high proportion of small and mid-sized institutions. Generally, only the largest firms have developed the bulk of their own software systems. Many standard packages are offered, although these often require modification to meet a particular bank's needs. Modification can occur in two ways, with no particular pattern except size of institution: smaller firms generally contract to the vendor or a third-party consultant (sometimes a small local contractor); larger firms use their in-house information systems staff.

To date, PC-based banking software products (except for spreadsheet-type utilities) have generally been restricted to specific departmental applications. There are few PC-based software systems robust enough to meet the high-volume transaction needs of most central banking functions. Sophisticated capabilities for security, rollback/recovery,

distributed data entry, etc.—all required and available as standard database and operating system services in the mainframe/mini world—are still generally unknown on PCs. In addition, few of the key volume-based banking peripherals are available for PC attachment. Mainframes and minicomputers remain the rule for integrated core systems, although this rule may change with advances in power and sophistication of PC-based operating systems and data bases. (A related trend at the minicomputer level was covered in Section 2, Turnkey Systems.)

Mergers and acquisitions are having a significant impact on the software market. In general, acquiring banks do not purchase new applications software as part of a merger. Instead, they usually merge operations of the two institutions onto one platform using existing software packages. Although sometimes this may be on one of the acquisition's systems, it is typically on the (larger) acquirer's system. As a result, existing software licenses are canceled. Attempts by software vendors to stop acquirers from using existing software to process multiple institutions' work after an acquisition have generated such negative publicity and resentment in the industry that the whole pricing structure has come under fire. As a result, even existing licenses are starting to bring in less revenue, and software pricing has become much more competitive. These two factors—reduction in outstanding licenses and more competitive pricing—will modulate growth of software vendor revenues.

In the short term, bankers increasingly will try to make do with existing systems except where competitive pressures—such as for RDBMS-based support of relationship banking—require new software investments. Later in the period, advances in PC power—CPUs, disk drives, operating systems, data bases, and high-transaction-rate peripherals—will lead to a new generation of PC-based software applications that will continue the steady workstation/PC applications software growth, while mainframe and minicomputer expenditures diminish slightly.

Exhibit IV-2 details the growth expected in software products. Expenditures are expected to grow at a 9% CAGR, going from more than \$2.6 billion in 1994 to over \$3.9 billion in 1999. As with turnkey systems, this is somewhat lower than last year's forecast of a 10% CAGR for the 1993-to-1998 timeframe. The primary reason for this reduced growth rate is the assumption that most new applications software packages will be implemented on client/server networks. Pricing for such applications is typically lower than mainframe package pricing. Also, due to the complexities of developing client/server systems and integrating new applications with existing legacy systems, an increasing portion of applications software packages will be delivered as part of a systems integration contract that links these new applications into a bankwide processing network.

4. Outsourcing

Outsourcing vendors, along with processing services vendors, have benefited from the banking industry's recent efforts to cope with low profitability and regulatory requirements for higher capital ratios. A systems operator often offers to purchase a capital-consuming in-house data processing operation and guarantee the bank or S&L yearly savings over the course of a multiyear contract. Over the forecast period, this combination will continue to outweigh the institution's natural hesitation to give up corporate control of a key business resource. Note, however, that credit unions (which have few in-house systems) and nonbank financial services firms (which have few regulatory requirements and generally higher profitability levels) are largely exempt from such dynamics.

Exhibit IV-2 shows the growth expected in outsourcing, based on these trends. Expenditures will go from slightly less than \$3.4 billion in 1994 to \$7.4 billion in 1999, growing at a 17% CAGR.

5. Systems Integration

The market for systems integration is closely related to that of professional services. The key distinction between professional services consulting and systems integration is who bears the ultimate responsibility for planning and managing a systems installation project. Consulting firms typically provide analytical or technical support as professional services to their clients, and seldom bear responsibility for the result of an implementation project. Systems integrators, in contrast, act as the general contractor on a systems project, assume project management responsibility, and generally bear some financial risk for the success of the project.

The complexity of today's information systems and services technologies and the rapid pace of technological change make it increasingly difficult to manage large-scale development projects—especially projects requiring a combination of in-house and outside resources. And in merger situations, in-house staff may be unfamiliar with the systems environment of their new partner and inexperienced with the specific problems of integrating or linking the partner's systems with their own. In addition to supplying management expertise, systems integrators typically provide a variety of proprietary tools and techniques that facilitate the technical task of integrating these multiple system environments.

Exhibit IV-2 shows the growth expected in systems integration. Expenditures are forecast to grow at an annual rate of 21%, from \$690 million in 1994 to nearly \$1.8 billion in 1999. These numbers reflect the

fact that, in the short term (1-2 years), relatively few commercial banks, S&Ls, or even brokerages—under current financial conditions—are undertaking complex new projects requiring systems integration services. Over the longer range (2-5 years), demand for the service will grow as the pace of bank mergers, consolidations and re-engineering of the IS environment begins to increase. The services of systems integration firms will be increasingly important to guide newly merged commercial banks through the complexities of systems consolidation, the implementation of client/server systems, and the linking of new technology systems to old legacy systems. In part, the larger size of the merged organization—especially when there have been multiple, successive takeovers by one institution—eventually should drive many to cost-justifying larger in-house systems (with or without new technologies such as imaging) that systems integrators can help set up.

Strong and aggressive nonbank financial services firms are expected to make continuing large systems investments, providing some specific niche opportunities for systems integration firms. However, as these firms are relatively few in number, their impact on this market will be relatively small.

6. Professional Services

The use of professional services by the banking and finance industry is strongest, historically, in the area of contract programmers and other consultants who can satisfy specific programming and systems needs on a relatively short-term, project-oriented basis. There has also been secondary use of consultants for services such as overall systems evaluation, overviews of technologies and new technical options, and assistance in re-engineering business operations in the largest banks, brokerages, and nonbank financial institutions.

Exhibit IV-2 shows the growth expected in professional services. Expenditures for this delivery mode will grow from \$2.9 billion in 1994 to over \$4.3 billion in 1999, at a CAGR of 8%.

The trend shown for the use of professional services reflects continued emphasis on cost control. In this atmosphere, the first cuts generally are made in expendable contract programming and consulting services, as opposed to in-house staff. Also, despite the continuing rapid pace of change in information technologies, the smaller cash-strapped institutions generally will not pay for noncritical technology consulting in the short term. Even the largest banks and nonbank financial services firms—of which there are relatively few—will likely be conservative regarding expenditure for noncritical projects.

One exception to this trend is found in institutions that are adopting CASE tools and/or implementing client/server technology. In both situations there is an opportunity for vendors with specialized skills to provide both development support and training for in-house staff. This will be especially true with larger institutions, whereas the smaller institutions are more likely to use the expanded services of a systems integrator, letting someone else assume the management responsibility for implementing these new systems.

As users try to reduce overall staffing levels while still retaining the "best and the brightest," there is also a move to outsource the maintenance work on old systems while giving in-house staff the opportunity to work with newer technologies and applications. Toward the end of the forecast period, an increase in the rate of institutional consolidation should create additional opportunities for professional services firms to consult with the acquiring firms on systems expansion and/or consolidation.

7. Network Services

Banking and finance industry firms generally are significant users of network services, especially for value-added data communication services and to a lesser extent for electronically accessed information services. The main use of network services is by banks and nonbank credit card issuers and processors. Banks and other processors handle both sides of a purchase or ATM transaction, often through value-added access to networks such as Visa, MasterCard, Plus, etc., via packet network services such as BT Tymnet and US Sprint's Telenet.

Banking institutions and nonbank financial institutions are also heavy users of network-based credit reporting services, especially from giants such as TRW and Equifax.

Brokerages use on-line information sources—such as market quotation or information services like Quotron and Reuters—for regular or occasional access to multiple specialized information feeds to meet specific trading needs.

Exhibit IV-2 shows the growth expected in network services, based primarily on continuing growth in the use of transaction-related (debit and credit) cards. Additional growth from use by brokerages assumes a continuation or increase in current market volumes. INPUT forecasts expenditures to continue their growth at a 16% CAGR for the next five years, going from more than \$1 billion in 1994 to \$2.1 billion by 1999.

C

Industry Segment Analysis

In Chapter III, the banking and finance sector was segmented into commercial banks, savings institutions, credit unions, and brokerages and other financial services firms. Exhibit IV-3 provides INPUT's forecast of information services spending for the segments of the banking and finance sector for 1994 and 1999. The percentage columns provide an estimate of relative market size, and the CAGR indicates five-year growth.

Exhibit IV-3

Industry Segment Markets, 1994 and 1999

Industry Segment	1994 (\$ M)	Percent	1999 (\$ M)	Percent	1994-99 CAGR
Commercial Banks	8,640	53%	16,300	57%	14%
Savings Institutions	2,930	18%	4,580	16%	9%
Credit Unions	2,280	14%	3,140	11%	7%
Brokerages and Other Fin Inst	2,450	15%	4,580	16%	13%
TOTAL	16,300	100%	28,600	100%	12%

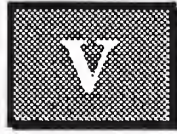
There are several disparate factors driving the growth rates in information services spending by each of the market segments in the banking and finance sector. The relatively high growth and increasing proportion of the overall information services expenditures by the commercial banking sector is tied to the sector's ability to leverage systems operations and systems integration offerings. These faster growing delivery modes are primarily driven by the medium-sized and larger banking institutions.

Brokerages and other financial services firms show a relatively steady but slightly lower growth rate than commercial banks. Brokerages, although emerging from the relative stagnation that persisted for years after the 1987 crash, are still operating cautiously in a market that began to recover in 1991 but has not yet shown a clear and consistent pattern of growth and stability. Business growth may or may not accelerate soon, but as of mid-1994, the market has retreated nearly 10% from its flirtation with a 4000 Dow, and many pundits are predicting an even further and significant "correction" from current levels. Crash and

layoff memories and continuing budget restrictions will dominate the IS environment, resulting in only moderate increases in information services spending.

The savings institutions and credit unions will see lower growth and a declining proportion of expenditures in the information services sector. These smaller institutions will be able to leverage the lower costs of client/server technology or stay with processing services and turnkey systems offerings, and are not inclined to frequent changes in applications software.

- For credit unions, INPUT assumes that no restrictive legislation to limit their low-cost popularity will be passed as part of federal banking regulatory reform. Enactment of such restrictions would, of course, shift these organizations to an even lower growth path.
- For savings and loans, the overall growth in information services expenditures will be modest, as some institutions will be merged and the remainder will fall back to a slow growth trajectory.



Competitive Environment

This chapter presents descriptions of information services vendors serving the banking and finance industry sector. The chapter is segmented into the following sections:

- Competitive Climate
- Participating Vendors
- Leading Vendor Profiles

A

Competitive Climate

The banking and finance industry sector is comprised of many diverse financial institutions (banks, S&Ls, and specialized institutions); thus, information services firms are presented with a number of different target markets for their product and service offerings.

However, despite the large number of financial institutions that conduct business within the U.S., the industry is dominated by a relatively small number of companies. As mentioned earlier in this study, approximately 65% of the nation's bank deposits are controlled by only 2.5% of the banks. As a result of this oligarchical tendency, competition between information services firms for the top-tier accounts is extremely aggressive.

Business strategies developed by the information services firms that compete in the banking and finance industry are, in part, influenced by the following factors:

- Many midsized and large institutions still conduct most of their internal and external IS functions on mainframe computers because of the bandwidth limitations of personal computers.

- Small and mid-sized banks, in an effort to compete against large regional banks, are investigating the benefits of personal computer-based cash management systems, rather than expensive mainframe upgrades. Features offered by these systems include direct deposit of payroll for small business users, transfer of funds, and automated account reconciliation.
- Financial institutions are evaluating their workflow processes and are looking to imaging technology to reduce the paper flow and increase productivity.
- Organizations are examining IS outsourcing as a method of controlling expenditures.
- There is increasing electronic interaction between banks/financial institutions and their clients.
- IS budgets are closely monitored and management is looking for measurable return on investment.
- Currently, bank failures are occurring at a decreasing rate.

B

Participating Vendors

A wide variety and large number of information services firms serve the banking and finance industry, without any overall pattern of dominance or concentration of market control. However, in some specific market niches, a small number of vendors do control most of the business. In check processing for example, EDS and Perot Systems together account for more than 50% of the market.

Leading vendors are often banking-industry specialists, such as Systematics, yet many multi-industry vendors such as IBM and EDS also compete intensely for market share. Exhibit V-I presents a partial listing of IS firms and their correlating areas of business.

Exhibit V-1

Company Segmentation by Product/Service Delivery Mode

Company Name	Network Svcs.	Proc. Svcs	Prof. Svcs.	Sys. Int.	Sys. Ops.	Turnkey Sys.	Appls. SW
Andersen Consulting			X	X	X		X
Dow Jones	X						X
EDS	X		X	X	X		
Fiserv					X		
IBM	X	X	X	X	X		X
M&I Data Services		X			X		X
Mellon Bank Corp.					x		x
NCR/AT&T			X	X			X
Systematics					X		
UNISYS			X	X	X		X

However, there are patterns in the kinds of services offered by vendors, based upon the size of the target institution and the nature of the application area supported. For example, most turnkey vendors are small firms targeting specific niche markets. In the mortgage processing area, laptop computers for loan origination and file folder imaging systems for back-office processing are significant turnkey markets. In the brokerage field, trader workstations with built-in analytic and display software are an important turnkey segment.

Processing services continues to be an area of increasing vendor concentration, due to the economies of scale in both operations and application development and maintenance. Full-service contracts, for which a vendor handles all of the client's processing, are typically associated with the very large number of small institutions (less than \$50 million in assets). However, specialized services such as securities safekeeping are used by firms as large as Bank of America.

Applications software and professional services are provided—and purchased—by firms of all sizes. Again, the smaller vendors are in function- or-product-specific niche markets, whereas the larger vendors provide more global support in both applications suites and categories of service.

Systems integration and systems operations services are usually found in the larger vendor and client companies, although more midsized institutions will probably start to use system integration services to develop and implement new client/server applications. In both of these delivery modes, the client must have a large enough operation to realize significant improvements in cost/quality control by turning over development or operations to an outside company. Additionally, the outside company must be large enough to deliver these economies of scale. Systems operations vendors often have guidelines that suggest a minimum asset base of \$250 million before a systems operations contract is worthwhile.

Electronic information services are provided by only a few large vendors, but are used by institutions of many sizes and types. In general, the vendors specialize by type of information provided, and the usage is a function of the client's overall size and business volume.

In summary, competition is intense for the business within an industry sector that includes many smaller and midsized institutions that make extensive use of information services. Many of the larger vendors provide a variety of services so that they can support clients of any size, or provide a full range of applications support so they can support all the needs of any given client.

C

Leading Vendor Profiles

Exhibit V-2 presents a list of leaders within the banking and finance industry and their corresponding 1993 estimated market share.

Exhibit V-2

IS Market Share

Company	Market Share (Percent)
IBM	7
EDS	6
First Data Corporation	5
Systematics	3
Fiserv	3
ADP	3
Andersen Consulting	3
Dow Jones	2
DST Systems	2
Unisys	2

1. Affiliated Computer Services, Inc.

2828 North Haskell
P.O. Box 219002
Dallas, TX 75204
Phone: (214) 841-6111
Total Employees: 2,500
Total Revenue: \$227,000,000
Fiscal Year End: 6/30/93

a. Background

ACS provides a broad range of information processing services to financial, commercial and government institutions operating in time-sensitive businesses.

- The company has three principal lines of business: Financial Services, Commercial Services and Records Management.
- Services include data processing, network management services, systems integration, electronic funds transfer, electronic benefits transfer processing, facilities management, automated teller machine (ATM) support and maintenance and records management services.
- ACS also provides business forms and office products through Precept, a wholly owned subsidiary.

ACS's strategy is to generate recurring revenue by developing long-term relationships with customers that outsource information processing and records management services.

b. Financial Services

ACS Financial Services provides a range of processing services to financial and government institutions through five business units as follows:

- Core Data Processing
- EFT Processing
- Securities Processing
- Hardware Field Services
- Electronic Benefits Transfer

Core Data Processing:

Included in Core Data Processing Services are three product lines—Advantage, Dimension 4000 and Premie Platform.

- Advantage is ACS's on-line processing service for banks that offers a range of fully integrated banking applications, integrated deposits, certificates of deposit, IRAs, installment loans, commercial loans, retail lending, mortgage loans, PC teller support, customer service, customer information files and general ledger.
- Dimension 4000 provides custom-designed applications using Kirchman Corporation's Dimension product line.
- Premier Platform is a multivendor "big bank" processing platform based on software from Hogan Systems and Shaw.

Back Office Support Services (BOSS) are offered through the ACS network of data centers. These services complement the Core Data Processing offerings. Services include bulk filing, statement preparation, microfilming, item capturing, lockbox and remittance processing, proof encoding and deposit services, and return-item processing.

ACS provides a variety of ancillary services that complement its core processing systems. Some are developed and supported in-house, while others are provided through alliances with third-party suppliers. These services include Voice Response Banking, On-Line Report Recall, Cash Management/Small Business Services, CRA/HMDA Reporting, Safe

Deposit Box, Asset Liability Management System, Electronic Office, Signatures On-Line and ACH Origination.

Electronic Funds Transfer Services:

ACS uses its MoneyMaker™ ATM/POS product to process its clients' electronic funds transfer (EFT) requirements.

- MoneyMaker is a Tandem-based product featuring fault-tolerant connectivity of ATM and POS devices. MoneyMaker is fully interfaced to ACS's banking systems.
- The on-line, real-time interface between MoneyMaker and Dimension 4000, Advantage, and Premier allows banks' customers to process their ATM and POS transactions using actual account balances.
- MoneyMaker also offers surcharging, an integrated card production and management system, on-line hot and warm carding and instant issue capabilities. Data encryption and on-line monitoring control with strict compliance with Regulation E and Reporting are also provided.
- The EFT system features 1,900 ATMs directly connected to ACS's nonstop Tandem Computers, 24-hour/7-day network monitoring and dispatch, all vendor ATM support and single- and multiple-account access capabilities. The system is based on the proven Tandem/ACI BASE 24 production environment with full regulatory compliance.
- The MoneyMaker network links to VISA, MasterCard, American Express, CIRRUS, PLUS, Discover, Pulse, Gulfnet, Exchange, Master Teller, Express Cash and other regional networks.
- ACS currently provides full-service EFT processing to a range of clients—from banks to supermarkets—located across the nation. Customer size ranges from \$2 million to multibillions of dollars in assets.

ACS also offers the Tidel AnyCard ATM system, a script terminal featuring timed access cash controllers.

Retail point-of-sale (POS) services include credit and debit authorization, electronic draft capture, ACH debit, check verification and reporting and settlement.

Securities Processing Services:

ACS Financial and Securities Services provides specialized processing to the financial community. Applications offered include:

- MF2000, Mutual Fund Sales System and Fulfillment System
- LP2000, Limited Partnership System
- TA2000, Transfer Agent System and Services
- CR2000, Corporate Reorganization System
- The division also offers proof/audit controls, proxy systems, a Chapter 11 System, and escheatment.

Hardware Field Services:

ACS/Field Electronics is a third-party maintenance company that provides first- and second-line hardware maintenance, including board-level repair on ATM devices, such as the MoneyMaker network's ATMs.

This maintenance includes electrical, electronic, and mechanical repairs, as well as preventive maintenance (cleaning, adjustment and lubrication of all components).

Maintenance is provided for all major brands of ATMs—Burroughs, Docutel, Diebold, IBM, NCR and Fujitsu.

ACS/Field Electronics also provides cash replenishment services.

ACS/Field Electronics operates in 14 states. Among its customers are banks, credit unions, savings and loans and retail chain stores.

Electronic Benefits Transfer Services:

ACS currently provides full-service, on-line electronic benefits transfer (EBT) processing services for government agency programs such as Food Stamps, Aid to Families with Dependent Children, Unemployment Insurance, Medicaid, Child Support, Social Security, Supplemental Security Income and General Public Assistance.

ACCEPT, ACS's electronic benefit distribution system, permits electronic delivery of cash and medical services benefits through ATMs, POS and debit/credit terminals, or by direct deposit into individual accounts.

The ACCEPT PLUS program, announced in June 1990, incorporates the placement of electronic terminals at retail checkout lanes in conjunction with consumer payment transaction processing and settlement services. The program supports both Commercial Services and EBT transactions.

c. Key Points

Key challenges for ACS include:

- Making the transition from a utility/facilities management processor to a value-added outsourcer
- Differentiating itself from a significant number of large competitors in the banking and finance and health care industries
- Continuing to build on functional outsourcing opportunities, including its MoneyMaker ATM and EFT customer base of retailers and entertainment industry customers

Aggressive acquisition of companies has positioned ACS to expand into various vertical industries and to bid on larger contracts against its major competitors.

- ACS continues to target financial services applications which generate about 45% of total revenue. Its three financial software products-- Advantage, Dimension 4000 and Premier Platform—provide ACS with a great deal of flexibility in providing services to banks. INPUT estimates the outsourcing market for financial services will grow from \$3.4 billion in 1994 to \$7.4 billion by 1999—a CAGR of 17%.

ACS is positioning itself as an outsourcing vendor able to offer a broad range of services, including records management. This may gain ACS add-on business with existing clients as well as demonstrating the experience needed to attract new clients.

2. The BISYS Group, Inc.

150 Clove Road
Little Falls, NJ 07424
Phone: (201) 812-8600
Total Employees: 1,000 (6/93)
Total Revenue: \$88,280,000
Fiscal Year End: 6/30/93

a. Background

The BISYS Group, Inc. (BISYS) is a leading third-party provider of transaction processing and related services to the financial services industry.

- The company's principal services are provided to commercial banks and thrifts through its TOTALPLUSTM IBM mainframe-based processing service.

- As the result of several acquisitions, BISYS also provides loan administration and servicing for a range of real estate and consumer loans to various types of financial organizations; item and currency processing services to banks and retail organizations; 401(k) marketing support, administration, and recordkeeping services; and administrative distribution, marketing, fund accounting and transfer agency services for proprietary mutual funds primarily to banks.

BISYS was organized in August 1989 to acquire certain banking and thrift data processing operations from Automatic Data Processing, Inc. (ADP). Together with its predecessors, BISYS has been providing processing services for over 25 years.

b. Financial

Services are provided to BISYS' clients, for the most part, on the basis of multiyear contracts that renew for successive terms, unless terminated by either party.

- The fee structure is based on the number of accounts, loans, participants and/or transactions handled for each service, subject to minimum monthly charges, plus additional charges for special options and features.
- BISYS generated approximately 91%, 93% and 91% of revenues in fiscal 1993, 1992 and 1991, respectively, from clients who were clients during the prior fiscal year.

Information Services Division:

BISYS' TOTALPLUS system supports all aspects of a bank's automated requirements related to its operations, customer management, and product distribution functions through proprietary central-site and client-site computing.

- TOTALPLUS capabilities include all deposit and loan requirements and general financial management of the institution, transaction and data management, electronic banking and customer information file management.
- Commercial bank and thrift institution clients are able to operate in on-line real-time mode, memo-post mode, or batch mode, or in any combination of the three.

- Four major data processing centers are located in the Chicago, Cincinnati, Houston, and Philadelphia metropolitan areas. Each of these centers uses consistent multitasking IBM (or equivalent) mainframe computers on which all TOTALPLUS host computer functions and client data reside. The centers interface with microcomputers or third-party terminals located at the clients' premises.
- Central-site processing applications provided by BISYS include:
 - Customer information file management services
 - Loan services
 - Deposit services
 - Electronic banking services
 - Interactive exception handling
 - Financial management services
 - Transaction and data management services
- Client-site processing applications supported by BISYS include:
 - New business systems, including Total Automated Branch System (Platform Module), Total Loan Manager, Total Marketing Manager and Total Sales Manager
 - Operations and electronic interface systems, including Total Automated Branch System (Teller Module), Total Access Banking (voice response system), Total Report Manager, Automated Cash Management and Total Check Processing System
 - Financial reporting and analysis systems, including Total Financial Manager and Total Automatic Report Generator
- Ancillary services provided by BISYS include technical and communications support, consulting, and the sale (or third-party leasing), licensing, and installation of microcomputer hardware, software, and peripherals.
- The target market for TOTALPLUS services consists of small and midsized institutions (commercial banks with \$50 million to \$500 million in assets and thrift institutions with \$100 million to \$2 billion in assets) and major institutions (commercial banks with \$500 million to \$2 billion in assets and thrifts with \$2 billion to \$10 billion in assets).

- As of June 30, 1993, clients using TOTALPLUS included 86 mutual savings banks, 183 thrift institutions, 64 commercial banks and three mortgage banks totalling 286 clients.
- During fiscal 1993, 48 new clients were converted and 18 clients were lost; eight due to regulatory intervention, six due to merger and acquisition activities and four due to other circumstances.

BISYS Document Processing, Inc. (formerly JRS) provides check processing and back-office outsourcing, including deposit processing, statement rendering, lockbox and return-item distribution of checks, share drafts, money orders and gift certificates.

- Item processing centers are in Boston, Chicago, Dallas, Houston, Oklahoma City and Richmond.
- These operations were expanded during 1993 with the acquisition of the item processing business of Data Management Systems (adding 27 new clients) and an agreement with Boulevard Bank in Chicago to manage its item processing operations and combine it with BISYS' existing Chicago operation.
- BISYS currently provides item processing for approximately 160 clients, of which 70 use other TOTALPLUS services.

A disaster recovery system, key restoration services (including off-site storage and rotation of critical files), availability of a third-party hot site and telecommunication recovery capabilities are also available.

Through BISYS Survey, the Information Services Division provides loan and deposit interest rate information on products offered by more than 3,000 banks, thrifts and credit unions on a daily, weekly or monthly basis.

- BISYS markets and electronically transmits this survey information in various formats and frequencies to over 700 banking organizations, including 22 of the nation's top 25 commercial banks.
- The data is used by both money center and community banks to make their daily pricing decisions.

Also, as of June 30, 1993, the Information Services Division was providing loan origination and servicing data processing to 65 mortgage banking institutions.

Loan Services Division:

BISYS provides nationwide loan services outsourcing through its Litton and TSSI subsidiaries to financial institutions, insurance companies, private investors, and U.S. government agencies.

- The Loan Services Division uses TOTALPLUS to meet its servicing automation requirements supporting accounting functions for an unlimited number of loans and portfolios; electronic funds transfer; payoffs and assumptions; on-line tax information tracking and disbursements; on-line insurance tracking and payments; on-line collections; delinquent loan management; foreclosure and bankruptcy tracking; escrow analysis; customized statements; credit reporting; customized regulatory and investor reporting; and optical disk storage and retrieval.
- As of June 30, 1993, BISYS was providing loan servicing to 80 clients.

Investment Services Division:

This division was established in July 1993 with the acquisition of Barclay.

Barclay provides 401(k) administrative and recordkeeping services to over 2,000 corporate clients throughout the U.S.

- On an ongoing basis, Barclay performs daily valuation of participant balances, processing of 401(k) loans, discrimination, testing, participant statements and communications.
- In marketing 401(k) services, Barclay enters into strategic partnerships with major brokerages, insurance companies and mutual fund companies as their 401(k) administrator and participant recordkeeper.
 - These strategic partners market their investment products to the potential company client and the Barclay administration and recordkeeping solution.
 - Barclay works closely with these partners, providing marketing and proposal support for the sales representatives of the brokerage, insurance and mutual funds organizations that distribute Barclay services.

Winsbury creates, markets and administers proprietary mutual funds, primarily for banks. Winsbury currently focuses on banks with \$2 billion to \$50 billion in assets and services over \$20 billion in mutual fund assets for 20 mutual fund groups. It also provides fund accounting services for

over 130 active fund investment portfolios and 30 common and collective bank investment funds.

Computer Hardware:

BISYS owns or leases seven IBM central processors and associated peripherals in support of its various processing services.

Data centers are located in Houston (TX), Cherry Hill and Lombard (NJ), Cincinnati (OH), Ambler (PA) and Richmond (VA).

c. Key Points

BISYS' objectives are to increase the number of its financial organization and other clients and to expand the services it offers them. The company's current strategy to attain these objectives is to:

- Be the single source for automated solutions for its clients' operations, customer management, decision support and product distribution functions
- Pursue balanced growth, both internal and external
- Attract new clients, having dedicated and invested resources in a national direct sales force and marketing support
- Cross-sell services, offering and developing central and client-site products and complementary services marketed to existing and new clients
- Seek strategic acquisitions
- Maximize recurring revenues through long-term contracts and focused account management
- Strategic business partnerships

In order to respond to the demands for new products and services and to sustain the competitive advantage of its TOTALPLUS product family, BISYS increased its research and development investment in fiscal 1993.

- As a result, major feature, function and architectural enhancements were incorporated into the host-based Mortgage Banking, Commercial Lending and Demand Deposit systems.
- The company also significantly expanded its client-site products, including Consumer Loan Origination and Credit Scoring, Electronic ACH, Treasury Management, and Interactive Collection Management systems.

- Consistent with the company's product strategy of providing cost-effective decision support tools, BISYS also introduced its new Executive Information System.

As of June 30, 1993, BISYS had approximately 1,000 employees, including Barclay and BISYS Survey. The company currently has about 1,100 employees.

3. Equifax, Inc.

1600 Peachtree Street, N.W.

Atlanta, GA 30309

Phone: (404) 885-8000

Fax: (404) 885-8682

Employees: 12,800 (12/93)

Revenue: \$1,217,217,000

Fiscal Year Ending: 12/31/93

a. Background

Equifax Inc., headquartered in Atlanta (GA), is structurally a holding company for its corporate subsidiaries that conduct the actual operations of the company.

The company is currently organized into four major service groups as follows:

The *Financial Information Services* group includes Credit Information Services and Payment Services divisions.

- Operations of the Credit Information Services group are managed through three divisions—Credit Reporting Services; Mortgage Information Services and Risk Management Services.
 - The Credit Information Services group contributed approximately 33% to Equifax's total 1993 revenue.
 - Equifax operates a large consumer credit network in the U.S. and the Caribbean, consisting of 265 company-owned and affiliated credit bureaus. This group has a wholly owned subsidiary—Credit Northwest Corporation.
- Payment Services Group provides high-volume transaction processing through Equifax Check Services and Equifax Card Services.
 - This group contributed approximately 17% to Equifax's total 1993 revenue.

The Insurance Information Services group consists of Property and Casualty Insurance Services; Life and Health Insurance Services; Commercial Insurance Services and Business Information Services.

The *International Operations* group provides services in Canada through four divisions: Credit Information Services (consumer and business lines); Insurance Information Services; Telecredit Canada; Accounts Receivable Services; and in Europe through Equifax Europe.

The *General Information Services* group provides market research and healthcare information services to businesses.

b. Financial

Products and services offered by the business groups are as follows:

- Equifax Credit Information Services consists of Credit Reporting Services; Mortgage Information Services and Risk Management Services.
 - This group provides informational and administrative services for consumer and commercial credit report purposes, including mortgage information services. It also supplies decision support and credit management services.
 - Systems and services offered include risk management and collection services, account monitoring, locate services, fraud detection and prevention, credit card marketing programs and mortgage loan origination.
 - The Risk Management Services division offers financial solutions to the credit industry. The services include teleservicing, new application processing, customer service management, collections and loss recovery services.
 - In 1991, Equifax opened an Information Service Center in Atlanta to provide consumers with toll-free, 24-hour-a-day access to credit information consultants.
 - Equifax offers an on-line delinquency alert system and a bankruptcy alert system. Both are mathematical models to assist credit grantors in predicting which accounts are most likely to become serious problems for creditors.

- Payment Services consists of Check Services and Card Services. Payment transaction services offered include on-line authorization of checks written at the point of sale; credit card and debit card processing for small to medium-sized banks and financial institutions; and flexible credit card marketing programs and debt collection services.

c. Key Points

Equifax's strength lies in its breadth of information-based product and service offerings to business, industry and government and its ability to cross-sell these products and services. No one competitor addresses the full range of services offered by Equifax.

The challenge Equifax faces is to increase the usefulness and value of the information it provides. It will need to continue to capitalize on its expertise and innovative focus in order to achieve and maintain profitable growth.

4. M&I Data Services, Inc.

770 North Water Street

Milwaukee, WI 53202

Phone: (800) 822-6758

Total Employees: 2,000 (12/93)

Total Revenue: \$151,594,000

Noncaptive Revenue: \$112,964,000

Fiscal Year End: 12/31/92

a. Background

M&I provides processing services, systems operations services, and applications software products primarily to banks and thrifts. M&I also provides processing services to affiliates of its parent, Marshall & Ilsley Corporation, a diversified interstate bank holding company with \$7.8 billion in assets.

M&I was formed in 1964 as the processing services arm for Marshall & Ilsley correspondent banks in the state of Wisconsin. In 1982, the company began providing processing services to financial institutions outside of Wisconsin.

In 1986, M&I officially became a wholly owned subsidiary of Marshall & Ilsley Corporation.

b. Financial Services

M&I provides a range of processing/systems operations services to over 500 banks, savings and loans and savings banks in 41 states, with 198 remote sites and assets ranging from \$2 million to \$13 billion.

- M&I manages a network of over 57,000 CRTs, PCs and printers, and 3,000 EFT terminals.
- M&I produces over 28 million bank accounts/relationships per night and processes over 900 million on-line transactions a year.

M&I offers six delivery options for its products and services as follows:

- **Service Bureau:** Traditional remote computing processing services are provided that allow a financial institution to access M&I's data center for those applications it needs. M&I maintains the technical infrastructure and provides product and customer support.
- **Premium Service Bureau:** M&I provides a customized version of M&I's Integrated Banking System (IBS) for the client, run at an M&I data center. In addition, the client receives special programming services and dedicated product support.
- **Resource Management:** For this service, M&I manages selected data processing resources for the customer. This may include M&I and non-M&I software, people, and/or technical environment.
- **Facilities Management:** M&I manages the entire data processing function for the customer at the customer's facility.
- **Remote Compute Utility:** M&I software is purchased by the customer. M&I provides operations and support at an M&I data center until the client's experience level and hardware configurations permit processing in-house.
- **Software:** M&I IBS software is purchased and run on the customer's mainframe. M&I Trust System and Custom Statement Formatter (CSF) software may also be purchased and run on the customer's IBM or compatible mainframe.

M&I applications available via processing/systems operations services include the following:

- Customer Information System (IBS)
- Financial Control System
- Deposit System (IBS)

- Loan System (IBS)
- Customer Profitability System (IBS)
- MICARD Services for bankcard processing
- MICASH for corporate cash management
- MIPATH for electronic funds transfer
- Teller/Platform Systems (IBS)
- Teller Card Link
- Custom Statement Formatter
- Trust System
- ExecuVision
- M&I also offers the INFO Center, a series of products used by processing clients to retrieve, manipulate, analyze, and present data, and bulk filing services.

M&I's Brown Deer data center has the following computers installed in support of its processing services:

- 1 IBM 3090-600S
- 1 IBM 3090-600J
- 1 IBM ES9000-860
- 1 Hitachi HDS GX 8520

M&I applications software products for IBM and compatible mainframes include the following:

- The M&I Integrated Banking System (IBS), introduced in 1980, offers an integrated on-line, real-time financial processing software network and is designed for financial institutions in a multibank, multibranch environment.
 - The software is available through an exclusive marketing agreement with Software Alliance Corporation of Berkeley (CA).
 - IBS applications include:
- Integrated Deposits (Demand, Savings, and Time)

- Integrated Loans (Commercial, Consumer, and Mortgage)
- Customer Information System, which also supports relationship management and profitability measurement
- Teller Terminal Support Systems
 - There are currently 50 IBS clients, including six of the top ten U.S. financial institutions. Clients include Chase Manhattan, First Interstate, First Fidelity and Bankers Trust.
- The M&I Trust System is a trust management system that provides in-depth reporting required by trust management, administrators, portfolio managers, operations personnel, tax analysts, and new business personnel.
 - The system is available as a processing service or as a software product for in-house use.
 - There are currently 95 clients.
- Customer Statement Formatter (CSF) is a PC front-end application residing on an IBM mainframe, enabling customers to quickly design documents. CSF has over 80 customers in the U.S., Canada, the U.K., France and Switzerland.
- The EASE Marketing Solution MCIF System combines the power of a leading MCIF product (the TotalMarketer™, from OKRA Marketing Corporation) with the data processing expertise of M&I Data Services to provide a single, PC-based source of marketing-oriented customer information.
 - Key customer information from core M&I applications, as well as non-M&I processed applications, is collected into an integrated database and grouped into marketing units called households. Customer data is further enhanced with geocodes, gender codes, demographics and lifestyle codes to provide a complete picture of customer relationships.
 - This information can be used to develop marketing programs that target customers most likely to use the clients' products.

PC-based applications available from M&I include the following:

- Salespartner is used by branch personnel to integrate platform sales, new accounts, teller transactions, and document preparation. Salespartner interfaces with M&I's applications available via processing services and with its software product, IBS. There are over 130 customers.
- TrustDesk links desktop computing with M&I's mainframe-based Trust System.
- ExecuVision is a PC-based management information tool. Users can perform variance analysis for budget control, track key indicators through trend analysis, and access information previously unavailable or difficult to obtain. Customers may also create custom reports and use self-defined critical success factors. Over 25 customers use ExecuVision.

c. Key Points

M&I is focusing its resources on the following objectives:

- Increased ease of use and decreased cost of use, resulting in greater efficiency for its customers
- Innovative products offering competitive advantages to its customers
- Flexibility to allow customers to adapt to changing financial industry conditions

M&I intends to capitalize on changes in the market, including:

- The trend for ever larger companies to outsource
- The trend toward open operating systems like UNIX and Windows. M&I is now using a new technology that enables existing software to run on lower-cost PC workstations.
- The trend toward plastic instead of paper, with new products like VISA and MasterCard Debit cards. M&I's EFT service, which provides support for ATM systems nationwide, has been very successful.
- The continued and increasing demand for innovative software

5. SEI Corporation

680 East Swedesford Road
Wayne, PA 19087-1658
Phone: (610) 254-1000
Fax: (610) 254-1105
Employees: 1,254 (12/93)
Revenue: \$ 247,170,000
Fiscal Year End: 12/31/93

a. Background

SEI Corporation, founded in 1968, offers a variety of investment products and services to banks, fund sponsors and investment managers. The company currently serves approximately 2,400 clients.

SEI has two principal wholly owned subsidiaries that are investment advisors registered with the Securities and Exchange Commission (SEC), as follows:

- SEI Financial Services (SFS)
- SEI Financial Management Corporation (SFM)

Since 1991, SEI has organized its operations around the markets to which it delivers products and services: Trust and Banking and Fund Sponsor/Investment Advisory.

- The Trust and Banking market unit, through SFM, provides information processing and software services, distribution and administration of mutual funds and other financial products, recordkeeping services, performance measurement and consulting services to banks. It also provides custody and back-office support services to financial institutions.
- The Fund Sponsor/ Investment Advisory market unit, through SFS, provides performance measurement, consulting, recordkeeping services and investment solutions to plan sponsors and money managers, along with strategic asset planning services to pension plans and insurance companies.

b. Key Products and Services

Trust Accounting and Management Information Services

SEI's Trust and Banking unit provides trust accounting and management information services via its 3000 product line.

The 3000 product line offers a trust accounting and management information system that supports investment accounting, client administration, portfolio analysis, trade-order processing, centralized securities and a financial information database, performance measurement and international and domestic securities processing.

The 3000 product line is made up of the following products:

- TRUST 3000® is an on-line trust accounting and management information system. The product features a securities movement and control program, directly linked to the Depository Trust Company that processes and tracks trades from trade date to settlement.
 - Depository Link, an interface to the Depository Trust Company for securities clearance and settlement, automates trade input, confirmation/affirmation processing, income and maturities posting, settlement entries and activity and position reconciliation.
 - Automated Cash Management provides an automatic daily sweep capability for all designated accounts.
 - Automated GNMA Processing handles the special monthly processing requirements of GNMA, FHLMC and Graduated Payment Mortgage securities, including automatic factor updates, payment calculation, posting and reporting.
 - Liquid Asset Management automates investment of excess cash into SEI money market mutual funds.
 - CustodyLink provides an automated interface with various outside custody processing systems. This interface is integrated with SEI's TRUST 3000, Security Movement and Control and Depository Link Systems.
 - ProxyLink automates distribution of corporate proxy and annual report materials to trust department clients through an interface with Independent Election Corporation of America.
 - Employee Benefit Reporting (EBR) is a benefit plan accounting and master trust reporting system.
 - Pension Payment and Payroll Processing automates the payroll functions of employee benefit plans requiring periodic payments.

- Mineral Interest Accounting (MIA) meets the special accounting needs of mineral interest, investments, including income processing, property reporting and exception reporting to highlight delinquent receivables. MIA provides automatic receipt of royalty payments, identification of unestablished leases and automatic payment posting.
- Automated preparation of 1041 tax returns is provided through an interface to CCH Computax, Inc. or FAST-TAX (Computer Language Research, Inc.).
- Cost and Profit Analysis helps identify accounts that require corrective action, highlights profitable products that can be expanded to provide even greater returns, provides the cost basis for establishing fee structures and pricing packages and provides information to justify special fees.
- The Relationship Banking System is an automated interface between the TRUST 3000 system and a bank's retail transaction processing along with demand deposit account systems for customized investment product offerings.
- InfoBuild is a PC-based data extract product that provides access to TRUST 3000 information to accommodate special reporting needs. The product can be used as a report writer or a gateway to any compatible PC spreadsheet or database management application.
- INVEST 3000® is integrated with TRUST 3000 and combines portfolio information with third-party research databases and analytical tools in support of investment management.
- TRADE 3000® is a trade-order processing system that tracks securities trades from the development stage of trade orders through execution and trade settlements.
- MarketLink is a securities trading system that automates trade order entry, trade execution and settlement posting through an interface with selected brokerage systems.
- SOURCE 3000® is a centralized securities and financial information database that uses third-party-provided pricing and other asset-related information.

- PERFORMANCE 3000® provides periodic reports that measure account performance, including rates of return and comparison with industry standard or customer-specific indices. Advanced performance reporting capabilities include rate of return and time period flexibility, segment combinations, management summary reporting, graphical displays and composite account reporting.
- Global TRUST 3000® is an integrated international and domestic securities processing product with multicurrency trust accounting capabilities.

As of December 31, 1993, SEI was providing processing or software services to 308 trust departments located in 48 states, the District of Columbia and Canada.

Investment Products and Services

SEI has created a number of investment products for institutional investors through its subsidiaries, SFS and SFM. In 1993, SEI began offering its Family of Funds on a retail basis through financial institutions and intermediaries.

The products include open-end management investment companies that offer multiple portfolios and classes within a portfolio and include:

- SEI Liquid Asset Trust—a money market fund
- SEI Tax Exempt Trust—tax-exempt money market and fixed-income fund
- SEI Cash+Plus Trust—money market and government bond portfolios
- SEI Index Funds—indexed equity and fixed-income funds
- SEI Institutional Managed Trust—equity, bond and balanced portfolios
- SEI International Trust—international equity and fixed-income portfolios

Services provided by SEI include:

- Administration services include back-office administrative, financial, legal/compliance and shareholder accounting services.
- Distribution services include marketing strategy and sales support.

- Asset allocation strategies and software and market assistance for banks

As of December 31, 1993, SEI provided administration and distribution services to banks and credit unions with assets under management of approximately \$19.6 billion.

As of December 31, 1993, the company had approximately 64 clients using its asset allocation program.

In 1993, SEI began offering ProVantage Funds to retail shareholders. As of December 31, 1993, the company had approximately 120 retail shareholders.

Investment Performance Services and Investment Products

SEI provides investment performance services and investment solutions to its benefit plan and money manager clients. Services include:

- International Equity Fund is a collective trust designed for plan sponsors who might be excluded from international investments because of high asset levels required for separate account management of international securities. At the end of 1993, the fund had an opening balance of \$600 million.
- Customized Asset Management Service (CAMS) is a program for small to medium-sized benefit plans, hospitals and institutional investors. As of December 31, 1993, CAMS had 43 clients.
- The Advisors' Inner Circle Fund is designed for money managers to create their own proprietary mutual funds for smaller account business. As of December 31, 1993, eight money managers offered 14 portfolios with total assets of \$650 million.
- The Lifetime Asset Management Fund (LAMP) is an asset management program that provides a fee-based business solution to financial intermediaries.
- Defined contribution retirement services business offers two principal software product lines:
 - ACCESS 3000 is the company's mainframe-based recordkeeping system with a PC front end.
 - PAY 3000 is an on-line, real-time interactive system that processes recurring and lump-sum pension payments from defined contribution and defined benefit plans.

- Insurance Asset Services, targeted to insurance companies, is an extension of the asset management and consulting services. As of December 31, 1993, there were 45 clients using these services.

c. Key Points

The company is moving away from product-driven strategies to market-driven strategies, and has organized its operations to focus on needs of clients in each of the markets it serves. This approach allows clients in a particular market to access products and services through company employees who are familiar with all of the relevant products and services for that market.

SEI is investing in research and development to improve existing software products and develop new services for the financial industry.

SEI's strength lies in its breadth of product and service offerings for the banking and finance industries and its ability to cross-sell these products and services. No one competitor addresses the full range of products offered by SEI.

However, in the future, if banks are allowed to participate directly in the securities business, it could prove to be a threat to SEI.

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Conclusions and Recommendations

A

Industry and Information Services Market Conclusions

The banking and finance industry faces a business and social environment of uncertainty and likely change during the 1990s. This will be especially true during the 1994-1995 timeframe, as the new administration seeks to legislate a broad range of economic and social reforms intended to restructure the economy and realign national priorities to coincide with the realities of the post-Cold War environment. Although the economy is no longer in a serious recession, it has not shifted into a serious and sustained recovery either. Meanwhile, some of the lose-lose situations discussed in last year's report have materialized as predicted.

The Clinton administration has, indeed, proceeded with some of its planned economic reforms. There has been significant disruption in the defense/aerospace sector, which tends to be concentrated in the same regions that hosted the real estate and S&L debacles of the 1980s. With a large number of base closings added to the defense/aerospace cutbacks, a lackluster real estate market and a flood of illegal aliens to support, California has been particularly hard hit.

Health care reform is now clearly on the Congressional agenda. No matter what form it finally takes, the changes will prove disruptive to everyone involved, from employers in general to specific groups such as health care providers, insurance firms, pharmaceutical manufacturers and a host of others.

Whatever the economic climate, regulations governing the operations and ownership of all financial segments can be expected to change, although the exact nature of changes will be subject to the uncertain interplay of powerful political and economic forces. There are already proposals from the Clinton Administration to combine all the financial

market regulators into one large organization, and these proposals are being met with considerable resistance by all those involved.

Despite occasional outbursts from critics, the problem of bank and S&L failures is largely behind us. Some further consolidation of the S&L segment is clearly ahead, and additional mergers and acquisitions can be expected in the commercial bank market. Credit unions can expect to enjoy a relatively unchanged—if unglamorous—future of locally based, nonprofit operation. The bright star, barring unforeseen regulatory changes, will continue to be the competitively aggressive and successful nonbank financial services firms.

In all segments of the industry, the trend toward outsourcing will continue. Some smaller institutions will find cost-saving opportunities in the use of integrated turnkey platforms that can handle the majority of their processing. Overcapacity and mergers will tend to restrain expenditures for processing services, but needs for systems integration, systems operations, and network services will cause these delivery modes to grow at levels better than the overall market rate. Continued budget constraints and the trend toward packaged application solutions will reduce expenditures for generic professional consulting services. However, some of the savings may be redirected toward specialized services such as business re-engineering or merger-related support.

The uncertainty overshadowing this or any other market forecast is the overall economic situation. In the long run, like Merrill Lynch, INPUT is "bullish" on America. In the short run, however, the situation is much more cloudy. On one hand, most of the pieces necessary for a recovery from the 1990-1992 recession appear to have been in place for some time, and the financial services industry has experienced a significant rebound in profits over the last three years. On the other hand, the new administration's economic restructuring initiatives have far-reaching implications for both geographic and industry markets. The short-term paralysis and longer-term dislocations caused by these proposals will have profound effects on financial institutions and their customers.

The recent actions of the Federal Reserve have also confused forecasters, as Chairman Greenspan has increased short-term interest rates by 1.5% in an attempt to moderate growth and forestall an inflation that few believed was imminent.

As a result of these economic and industry factors, the market outlook for information services firms selling into the banking and finance sector is one of only moderate growth during the forecast period. Institutions will continue spending in a relatively conservative manner until the economic and regulatory environment stabilizes, and a clearly recognizable and sustainable recovery occurs. For the most part,

financial institutions are unlikely, in this environment, to undertake new investments that do not promise significant short-term payoffs.

For most product/service sectors, growth will accelerate during the forecast period as the overall economic climate improves and FDIC deposit insurance premiums start to be reduced in the late 1990s. Although two product/service sectors—applications software and turnkey systems—show decreasing year-to-year growth rates, this is because of a projected shift in delivery channels, with more software and turnkey systems being provided through systems integrators rather than directly by the software and turnkey vendors themselves.

B

User Issues and Recommendations

1. Technological Issues

Key technological issues faced by banking and finance industry information services users are outlined below.

Mergers and Acquisitions—For an increasing number of information systems managers, the key technological issue of today is how best to integrate multiple systems and lines of business resulting from mergers or acquisitions. In most merger situations, the acquiring institution is larger than its acquisition, and in many cases has sufficient excess capacity to bring the additional work in-house. At a minimum, post-merger integration involves cross-system communication issues. But more typically, it calls for the elimination of duplicate applications, subsystems, or entire systems/services complexes in favor of integrated—and more cost-effective—operational environments.

Efficiencies and Downsizing—Even though profits rose in each of the last three years, the key industrywide drive to strengthen capital ratios means that systems budgets will continue to be squeezed. Deadlines and user demands, of course, will not decrease in proportion. Thus, instead of evaluating which major investments to make, most systems managers at S&Ls and commercial banks today are faced with constant pressure to generate more efficient performance from existing systems. This effort can sometimes be coupled with investments in new high-performance technology to allow systems consolidation—say, from multiple data centers to a single, less costly center. In other cases, downsizing and consolidation will be both an objective in and of itself, and the result of rigorous re-engineering of the bank production function, to gain either functional or performance-oriented competitive advantage.

Disaster Recovery—Given the regulatory mandate to plan for disaster recovery, implementing and upgrading these capabilities is a priority for all financial institutions. All institutions should recognize that such resources are only effective if they are fully tested and accommodate the full range of possible disaster scenarios.

Use of Processing Services—Any institution that is considering a switch from in-house support of users to an outside processing service, or from one vendor to another as part of a merger/consolidation effort, must carefully plan for and manage the change. Although processing services vendors offer some transition support, there is often a larger-than-anticipated need for additional consulting services to manage data conversion, develop new procedures, handle training, etc.

Regulation—New regulatory changes are an ongoing fact of life, and many changes with future effective dates are already on the books. Most regulatory changes have significant systems impacts, despite the fact that regulatory agencies often neglect this consideration when establishing their timeframes for implementation. Systems managers must be prepared to handle such disruptions, even in the face of tight or reduced budgets.

RDBMSs—Transition to RDBMS environments is increasingly common, if not yet universal, for commercial banks and S&Ls. Nonbank financial services firms have generally already made the transition. The key technological issue is actually a business issue: understanding the business objectives well enough to implement an RDBMS that will provide real cost-effective support and address real business problems. Most new RDBMS applications involve a mix of mainframe and PC-based resources. One of the challenges is modeling the applications under this distributed systems environment, projecting the likely impacts on existing systems resources, and defining the hardware changes necessary to maintain satisfactory response and performance levels.

Executive Information Systems—One of the main drivers of an institution's transition to an RDBMS may be senior management's desire or demand for an executive information system (EIS). Back-office operations (and, more recently, platform transactions) have been heavily computerized by most institutions. But few true EIS systems have been developed, and many of these have failed to generate the kind of high-level management information that can be critical in a fast-changing competitive environment. The new RDBMSs will perform a central role in making possible such executive-level systems. But equally critical is the active involvement of top management in the design and implementation of their EIS. Note that, although the costs of information technologies have always been visible to banking management, executive-level systems represent a new level of visibility

and involvement where success will be very important to the systems managers. Successful implementation of executive management systems, and careful attention to executive needs, can smooth the way for many future IS activities.

Imaging—Imaging technologies are being studied at one level or another by most financial institutions. Although small departmental "file folder" applications are being implemented by many institutions, the larger, high-volume item processing systems are being implemented by relatively few, due to high startup costs. An important part of the cost and complexities of implementing imaging is determining how it will impact and integrate with other systems. In general, the free-form nature of electronic images is in marked contrast to the highly formatted numeric content of most of today's banking information systems.

Workstation/PC Technology—Outside of brokerages, the future role of fast-evolving, high-powered workstation technology in the banking and finance sector remains uncertain. Raw costs and price/performance ratios are moving fast in the directions that users favor, yet the investment to use this technology is still sizable. Compounding this problem is the fact that new applications are becoming increasingly complex and consuming increasing amounts of raw processing horsepower. Indeed, there is a real question of whether or not all the improvements in hardware price/performance are not being consumed by ever more complex and ambitious applications. Managers must decide which applications, old or new, will justify such investments, when and how rapidly to embrace expensive new technologies such as complex client/server systems, and what systems integration issues must be faced.

CASE—Because of their size and limited resources, the majority of commercial banks, S&Ls, and credit unions prefer standardized application solutions (processing services, turnkey systems or packaged software) to in-house application development for their core systems. Many institutions with significant software development shops, however, are now evaluating whether to initiate CASE. There are a number of major stumbling blocks to using CASE today:

- CASE technology is still so new and unstandardized that it is hard to assemble a good suite of tools that supports all aspects of the development life cycle.
- CASE tools generally do not support the maintenance of old, legacy systems, so they address only 20%-30% of the workload of a normal IS shop.

- The cultural and mind-set changes required by CASE generally *reduce* productivity in the short run, and may require splitting applications development staff into separate CASE-based and traditional systems groups.
- A full set of CASE tools, together with the associated hardware, software, networks, databases and training required to support them, is a significant expenditure for any organization.

On cost and productivity counts, therefore, CASE investment likely will be postponed by many until costs come down and the technology matures.

Keeping Pace With Technology—The fact that the banking and finance sector is reducing the growth of its systems expenditures has not, of course, slackened the pace of technological change. Progressive systems managers need to find ways to make the key systems investments required to retain valuable staff if other industries offer better opportunities to use the latest technologies. For example, some investment of time and resources should be made to determine which technologies ought to be implemented on at least a trial basis. Careful trials can lead to selective implementation of cost-justified new technologies, allowing the institution to maintain a progressive posture with its staff and customers and giving it the flexibility to move more aggressively into additional technologies as required.

2. Business Issues

Key business issues that information services users face in the banking and finance industry are summarized below.

Priorities and Resource Allocation—Perhaps the toughest business issue facing today's banking and finance industry systems manager is coping with backlogged, continuing, and new user needs in an environment of strict cost controls. An especially thorny issue for many is the additional task—on top of normal responsibilities and priorities—of integrating the systems of one or more merged institutions. At some level, a *triage* mentality may be required, with clear communication to business management that certain current or proposed projects or investments simply must be delayed or cut from the plan in order to make reasonable progress on other higher priority or less costly ones.

Another key aspect of this *triage* process is trimming the surviving projects to the bone: focusing on swift implementation of required core capabilities and deferring "nice to have" features to a later date. Coupled with this is the problem of deciding how to implement the new systems features: Should legacy systems maintenance be frozen and any new

features incorporated into new interface systems (e.g., client/server front or back ends), or should legacy systems maintenance be continued at an active pace?

Cost Efficiencies—Pressures will continue to increase the savings from existing systems. Although some very large institutions are successfully downsizing multiple data centers, a much larger number of mid-sized institutions with only one facility are considering the cash and/or capital savings implications of switching to a processing service or third-party systems operator. At the same time, users of processing services are also looking with interest at the ever-improving price/performance ratios for minicomputer-based turnkey systems. Similarly, software development departments with reduced or frozen staff levels are evaluating the latest software packages to determine their cost and capabilities versus in-house development.

As usual in times of budgetary restraint in any industry, users of professional services must evaluate whether such spending is actually discretionary—or at least of relatively lower value than preserving in-house staff or funding alternate investments. One exception, of course, is consulting that is directly related to cost-cutting or efficiency improvements. Another is the conscious replacement of permanent in-house staff with project-oriented consultants—a strategy consistent with the shift away from customized in-house systems toward more standardized, vendor-provided application solutions.

3. Recommendations

Recommendations for users that derive from the issues outlined in this section are presented in Exhibit VI-1.

Exhibit VI-1

User Recommendations

- In all planning, consider the institution's competitive positioning as better times return.
- Deal with uncertainty by planning multiple scenarios, especially those keyed to changes in financial condition, the regulatory environment, merger/acquisition situations, and the evolution of technology.
- Adopt a thorough and professional approach toward financial management.
- Review and strengthen justifications for high-priority systems budget items.
- Anticipate a continuation of budgetary restraints and evaluate trade-off opportunities within the systems budget.
- Require demonstrated value for each professional services dollar.
- Adopt a flexible, multifaceted approach toward outsourcing options.
- If operating in-house, consider a processing service and/or outside systems operations to determine if cost-efficiency savings are feasible.
- Evaluate the cost effectiveness of available software packages versus in-house development.
- If your institution is of medium size or smaller, consider the benefits of the latest generation of minicomputer-based turnkey systems.
- Place a high priority on managing human and technology investments.
- Retain valuable staff. One way to do this is to make at least some investment in new technologies.
- If your institution has distributed resources, consider downsizing or merging multiple data centers.
- Fully understand and balance your business needs and technology strategies before choosing an RDBMS; don't choose a dead-end alternative.
- Carefully evaluate costs and benefits before undertaking imaging. Try a low-cost pilot and consider delaying implementation until costs drop or competitive pressures increase.

C

Information Services Vendor Issues and Recommendations

Recommendations for information services vendors generally parallel those for users, as they derive from the same set of issues. These recommendations are presented in Exhibit VI-2.

Exhibit VI-2

Vendors Recommendations

- Focus on the strategic position of your client.
- Look at interim business planning and consider creating scenarios to account for changes in regulations and user financial condition.
- Place more emphasis on selling to financially and competitively strong nonbank financial services firms.
- Consider each existing user's likely merger opportunities and the impacts, both positive and negative, on the vendor's systems or services.
- Identify and promote the benefits of investing now to achieve competitive advantages as banking industry conditions continue to improve.
- Help your clients cost-justify your services.
- Develop sales approaches that recognize that cash and capital are especially tight for most institutions in the banking and finance sector.
- Processing services vendors or outside systems operators should use this opportunity to press the case for preserving cash and/or capital.
- Proactively defend budget line items with user management.
- Help IS managers develop new and stronger cost justifications that they can present to their management.
- Turnkey systems vendors should actively sell advantages in cost effectiveness.
- Vendors of software packages should ask those who have declined such resources in the past to reconsider, given the cost effectiveness of outside rather than internal development under current economic conditions.
- Professional services firms must be prepared to offer well-documented and tougher cost justifications of the value they deliver and the services they provide.
- Help your clients manage their investment in technology and infrastructure.
- Professional services firms or systems operators should look for opportunities to help larger institutions downsize or merge multiple data centers or other redundant resources.
- New-technology vendors must emphasize the importance of a continuing investment in order to retain valuable staff members.
- RDBMS vendors should work with the client to understand all current and future business needs and thus present the strongest case for their product.
- Imaging vendors should consider offering low-cost "get-acquainted" pilots.

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Forecast Database

This appendix contains the forecast database for the period 1994-1999 and the 1994 Market Analysis Program database reconciliation.

A

Forecast Database

Exhibit A-1 presents the detailed 1993 actual and 1994-1999 forecast for the banking and finance sector.

Exhibit A-1

Banking and Finance
User Expenditure Forecast by Product/Service Market, 1994-1999

Product/Services Markets	1993 (\$M)	Growth 93-94 (%)	1994 (\$M)	1995 (\$M)	1996 (\$M)	1997 (\$M)	1998 (\$M)	1999 (\$M)	CAGR 94-99 (%)
<i>Sector Total</i>	14657	11%	16314	18112	20150	22585	25359	28623	12%
<i>Professional Services</i>	2588	11%	2885	3135	3393	3684	3992	4333	8%
- IS Consulting	688	13%	775	860	940	1040	1145	1260	10%
- Education & Training	375	12%	420	460	503	550	602	658	9%
- Software Development	1525	11%	1690	1815	1950	2094	2245	2415	7%
<i>Systems Integration</i>	601	15%	689	804	967	1188	1452	1786	21%
- Equipment	198	15%	227	263	310	371	450	554	20%
- Software Products	39	15%	45	52	62	77	101	122	22%
- Professional Services	335	14%	383	448	545	679	828	1025	22%
- Other	29	17%	34	41	50	61	73	85	20%
<i>Outsourcing</i>	2963	14%	3381	3901	4533	5307	6238	7400	17%
- Platform Operations	722	11%	804	895	998	1112	1239	1380	11%
- Applications Operations	1446	13%	1640	1892	2193	2552	2980	3519	16%
- Desktop Services	352	14%	403	467	551	672	820	1010	20%
- Network Management	318	23%	391	485	606	760	958	1216	25%
- Applications Management	125	14%	143	162	185	211	241	275	14%
<i>Processing Services</i>	4138	9%	4502	4898	5329	5873	6507	7210	10%
- Transaction Processing	4138	9%	4502	4898	5329	5873	6507	7210	10%
<i>Network Services</i>	897	13%	1011	1151	1327	1542	1798	2109	16%
- Electronic Information Svcs	792	13%	893	1018	1176	1368	1596	1873	16%
- Network Applications	105	12%	118	133	151	174	202	236	15%
<i>Applications Software</i>	2355	11%	2612	2870	3129	3401	3661	3940	9%
- Mainframe	1028	10%	1131	1228	1324	1417	1501	1587	7%
- Minicomputer	745	11%	827	910	992	1081	1167	1261	9%
- Workstation/PC	582	12%	654	732	813	903	993	1092	11%
<i>Turnkey Systems</i>	1115	11%	1234	1353	1472	1590	1711	1845	8%
- Equipment	479	7%	512	548	584	619	653	689	6%
- Software Products	430	13%	487	541	595	649	703	767	10%
- Professional Services	206	14%	235	264	293	322	355	389	11%

B**Forecast Reconciliation**

Exhibit A-2 offers a reconciliation of the 1993 and 1994 forecast for the banking and finance sector.

Exhibit A-2

Banking and Finance, 1994 MAP Database Reconciliation

Product/Service Sector	1993 Market				1998 Market				93-98 CAGR per data '93 Rpt (%)	93-98 CAGR per data '94 Rpt (%)
	1993 Market (Fcst) (\$M)	1994 Report (Actual) (\$M)	Variance From 1993 Forecast		1993 Market (Fcst) (\$M)	1994 Report (Fcst) (\$M)	Variance From 1993 Forecast			
			(\$M)	(%)			(\$M)	(%)		
Total	14550	14657	107	1%	25598	25359	-239	-1%	12%	12%
Professional Services	2682	2588	-94	-4%	3900	3992	92	2%	8%	9%
Systems Integration	586	601	15	3%	1523	1452	-71	-5%	21%	19%
Outsourcing	2786	2963	177	6%	6393	6238	-155	-2%	18%	16%
Procesing Services	4125	4138	13	0%	6400	6507	107	2%	9%	9%
Network Services	892	897	5	1%	1859	1798	-61	-3%	16%	15%
Applications Software	2366	2355	-11	0%	3744	3661	-83	-2%	10%	9%
Turnkey Systems	1113	1115	2	0%	1779	1711	-68	-4%	10%	9%

In this steadily growing market, there were only minor variations between the 1993 projection for 1993 expenditures and the actual amounts noted in the 1994 report. Variances ranged from a 4% overstatement of the 1993 professional services market to a 6% underestimation of the growth of the outsourcing market.

Variances in the projections for 1998 ran from -5% to 2%, and, rather than reflecting change or instability, underscored the fundamental stability of this marketplace. The slight reduction in growth forecasts for the 1998 market also are reflected in a 2% adjustment (downward) of the five year (1993-1998) compound annual growth rate (CAGR) projected for systems integration and outsourcing. Their five-year growth remains quite healthy, however, at 19% and 16% respectively.

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